PHOTOFACT® Folder

TUBE TESTER DATA
SET 544

INDEX

A cumulative index is included as a part of this Folder. Upon finding that a new tube is not listed on the roll chart of a tester covered in this service, refer to the latest Tube Tester Data Index to determine in which PHOTOFACT Set the data was published. If listed, reference to that Folder will provide the necessary data.

TUBE TYPES	JACKSON 598, 648, and 658 See PHOTOFACT Set No.	TUBE TYPES	JACKSON 598, 648, and 658 See PHOTOFACT Set No.	TUBE TYPES	JACKSON 598, 648, and 658 See PHOTOFACT Set No.
2CW4♦	544	6EQ7	516	8FQ7	536
2EV5	512	6ES8	524†	10EM7	532
2FQ5	524	6ET7	544	10HF8	536
2FY5	512	6FA7	524	12BZ6	524†
3ES5	524	6FG7	516	12DY8	516
3EV5	512	6FQ5	524	12GW6	528
4AV6	532	6FQ7	532	13EM7	512
4ES8	524	6FS5	520	15EA7	528
4GS8	516	6FW5	520	17DM4	532
5DJ4	528	6GK5	544	17GW6	528
5EW6	536	6GW6	528	19EZ8	524
5FG7	544	6GW8	528	19HV8	536
6AJ8	524†	6GX6	532	25DK4	540
6AL3	524	6GY6	536	34GD5	508
6CB5	524†	6HF8	532	50FK5	536
6CB6	524†	6HG8	528	VR75	524†
6CD6	524†	6HJ8	516	7233	540
6CD7	512	6HS8	524	7695	512
6CQ4	528	6JC8	544	7701	520
6CW4♦	544	6K11♦	544	7716	520
6D10♦	544	8ET7	516		

† See correction notice.

♦ These types can only be tested on 648S, 658A, 648 converted with 648 SM kit, and 658 converted with 658 SM kit.

JACKSON MODEL 598

Set 544

SUPPLEMENTS LATEST ROLL CHART 598-3

Tube Type	A.	B.	C.	Fil. Cont.	D.	E.	F.	G.
5FG7	5.0	4Y	8	5	6	9	7	45
	"	4Y	8		2	1		35
6ET7	6.3	4Y		5	9	7	8	22
	"	4	Z		2			59
	"	4	Z		3			59
6GK5	6.3	3YZ	7	4	5	2		48
6JC8	6.3	4YZ	7	5	6	2	3	68
	"	"	7		9	8		68

JACKSON MODEL 648

Set 544

SUPPLEMENTS LATEST ROLL CHART 648-24

Tube Type	Fil.	D.	E.	Plate Test
2CW4♦	2.0	A123	A45	35 V
5FG7	5.0	A126	AC389*	28 XZ
	"	A123	AC45	43 V
6CW4♦	6.3	A123	A45	35 V
6D10♦	6.3	AC3	AC67	32 YZ
	"	AC4	AC59	32 YZ
	"	AC2	A18	32 YZ
6ET7	6.3	A128	679	43 Z
	"	124	5	94 X
	"	"	3	94 X
6GK5	6.3	A234	A57	22 YZ
6JC8	6.3	A124	AB358	24 YZ
	"	"	A67	32 YZ
6K11♦	6.3	C3	AC67	40 WZ
	"	AC4	AC59	35 WX
	"	AC2	A18	35 WX

♦ These types can only be tested on 648S or 648R converted with 648 SM kit.

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JACKSON
MODEL 658

SUPPLEMENTS LATEST ROLL CHART 658-4

Tube Type	Sec.	Heater	Circuit H-K	P-G	Plate	Grid Test	Heater Current
2CW4♦	T	2.0N	123	a45	48S	10WY•	A6.4P Z450
5FG7	P	5.0H	123	ac689	44R	15WY•	
	T	"	"	ac45	26R	10WY•	A10.6N Z600
6CW4♦	T	6.4J	123	a45	48S	10WY•	
6D10♦	T	6.4J	C3	ac67	20S	10XY•	
	T	"	C4	ac59	"	10XY•	
	T	"	C2	a18	"	10XY•	
6ET7	P	6.4L	128	679	28Q	25VY•	
	D	"	124	5	89R	X	
	D	"	"	3	"	X	
6GK5	T	6.3J	123	a57	21R	5WY•	
6JC8	P	6.4J	124	ab358	53R	10WY•	
	T	"	"	a67	28R	10WY•	A10.6M Z450
6K11♦	T	6.4J	C3	ac67	20Q	60WY•	
	T	"	C4	ac59	27Q	10XY•	
	T	"	C2	a18	"	10XY•	

♦ These types can only be tested on 658A or 658 converted with 658 SM kit.

The PHOTOFACT® Servicer

SET 544 ★ *Published for all users of Howard W. Sams' Photofact Folders* ★ AUG. 1961

CONTENTS PHOTOFACT SET 544

TRADE NAME AND MODEL	SET AND FOLDER NO.
TELEVISION RECEIVERS	
ANDREA	
BR-P1-VT119, CG-P1-VT119, BR-P2-VT119, CG-P2-VT119 (Ch. VT-119, VT-119 50 ∿)	544-1
PACKARD-BELL	
17VT11, 19VT1, 23VT1 (Ch. V8-7, V8-9)	544-2
PRODUCTION CHANGE BULLETIN	
AIRLINE Phono Amp.	
GAA-2840A, GAA-2841A, GAA-2842A	544-3
RCA VICTOR Tel. Rec.	
231B602, U, 231B605, U, 231B606, U. 231B607, U, 231D545, U, 231D546, U, 231D547, U (Ch. KCS131ZJ, ZK, ZT, ZU)	544-3
OTHER EQUIPMENT	
ARVIN	
80P23, 80P25, 80P28 (Ch. 1.60801)	544-4
DECCA	
DP-406, DP-407, DP-408	544-5
FORD	
12BT, 12BU	544-6
HEATH	
AA-50, W-AA-50	544-7
KOWA	
KTS-1B	544-8
MOPAR	
109, 111, 113, 114	544-9
MOTOROLA	
X21W (Ch. HS-876)	544-10
PACO	
ST-35W	544-11
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892 (Tape Recorder)	544-12
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SHERWOOD	
S-3000 III	544-14
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1016, 1017, 1018 (Ch. 132.60401)	544-15
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45P17 (Ch. 663-1)	544-16
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7TP-30	544-17
YASHICA	
YT-100	544-18

This Servicer provides you with essential data on other models or special equipment not covered in standard PHOTOFACT folders. The schematics and supplementary data included here will be of valuable help to you in servicing this equipment.

IN THIS ISSUE OF THE SERVICER:

Capitol Model 119

Magnavox Chassis
68-01-00,
68-02-00,
68-03-00

ALIGNMENT

1. Use an isolation transformer when aligning the set.
2. Allow 10-20 minute warm-up time.
3. Place a 9-pin tube shield over the 6AQ8 Check this shield to make sure it isn't grounded.

FM ALIGNMENT (Using AM Signal Generator and VTVM)
Set band switch to FM position. Note: Place a 1 megohm resistor in series with hot side of VTVM

SIGNAL GENERATOR		SET RECEIVER	ADJUSTMENTS	CONNECT	REMARKS
COUPLE TO:	FREQUENCY	DIAL TO:		VTVM	
6AQ8 Tube Shield	10.7MC unmodulated	High end of dial	T3, T2 top and bottom slugs and T4 bottom slug.	From pin 3 to pin 4 of PC3.	Adjust for max. neg. reading on VTVM.
"	"	High end of dial	T4 top slug	Across C21	Tune for zero VTVM. (Point where voltage swings pos. or neg.)
"	"	High end of dial	Repeat steps 1 & 2	Repeat steps 1 & 2	Repeat steps 1 & 2
FM ant. terms in series with: 120 ohms (high side) 150 ohms (low side)	106MC	106MC	C9	From pin 3 to pin 4 of PC3	Adjust for max. neg. reading on VTVM.
"	90MC	90MC	C3	"	"
"	-----	-----	-----	-----	Repeat two preceding steps.

FM I-F AND RATIO DETECTOR ALIGNMENT (Using Sweep Generator and Oscilloscope).
Note: Place 1 megohm resistor in series with hot scope lead.

SWEEP GENERATOR		SET RECEIVER	ADJUSTMENTS	CONNECT	REMARKS
COUPLE TO:	FREQUENCY	DIAL TO:		SCOPE TO:	
6AQ8 Tube Shield	10.7MC (.3MC sweep) couple a marker sig. to 12DT8 tube shield.	High end of dial	T3, T2 top and bottom slugs T4 bottom slug.	From pin 3 to pin 4 of PC3	Open one end of C20. Adjust for max. amplitude and symmetry. See Fig. 1.
"	"	High end of dial	T4 top slug	Across C21	Adjust for best amplitude and straightest slope. See Fig. 2.
"	"	High end of dial	T4 bottom slug	"	Adjust for best symmetry about 10.7 MC See Fig. 2.
"	"	-----	-----	-----	Repeat steps 1, 2 & 3.

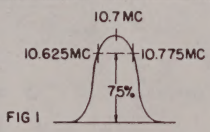


FIG 1

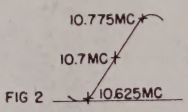
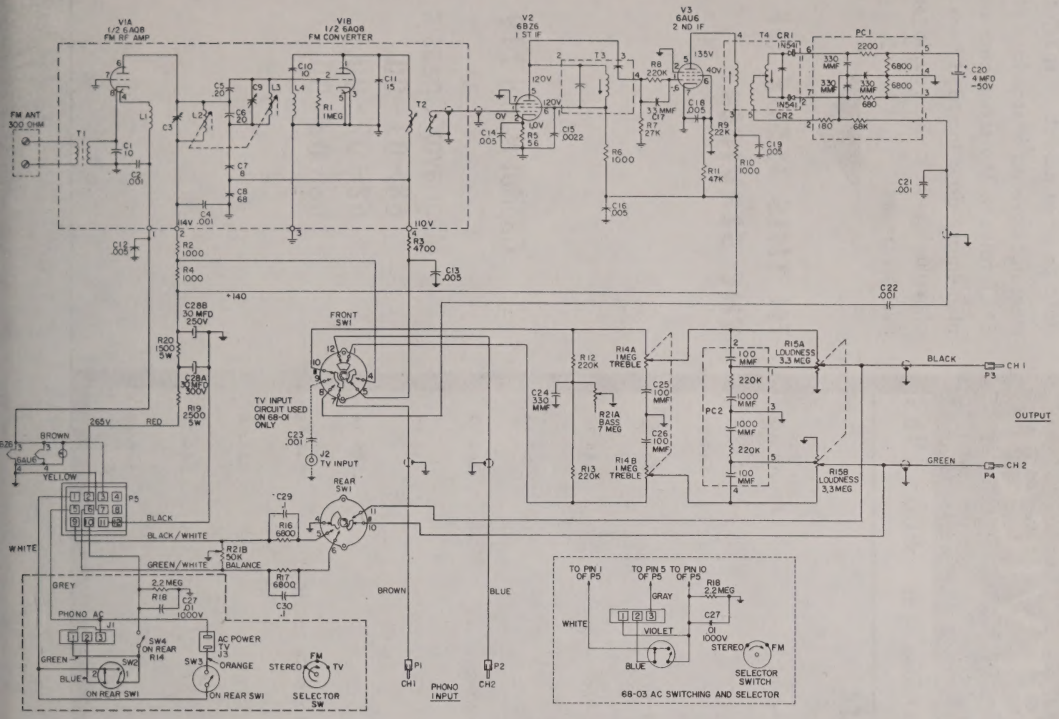


FIG 2

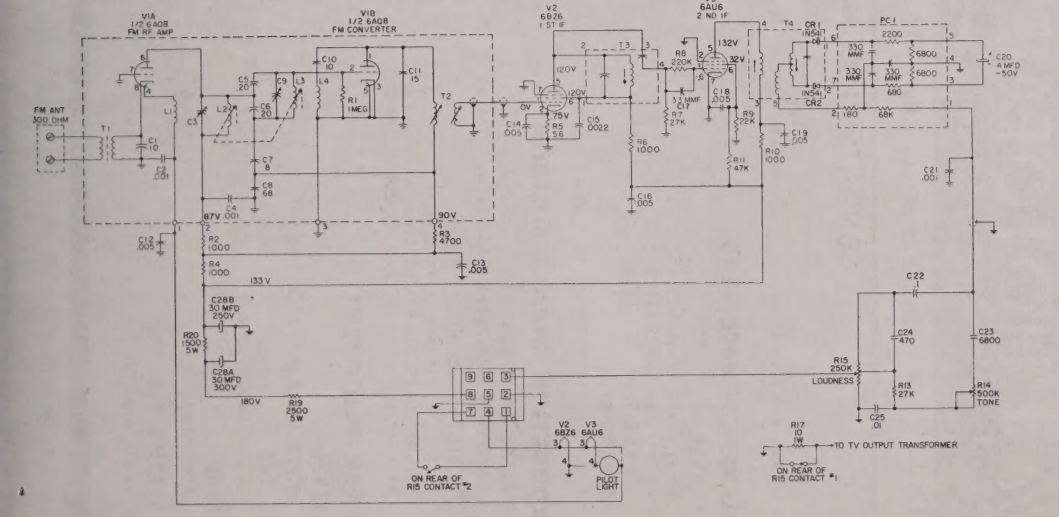
SCHEMATIC DIAGRAM

(68-01 & 68-03)

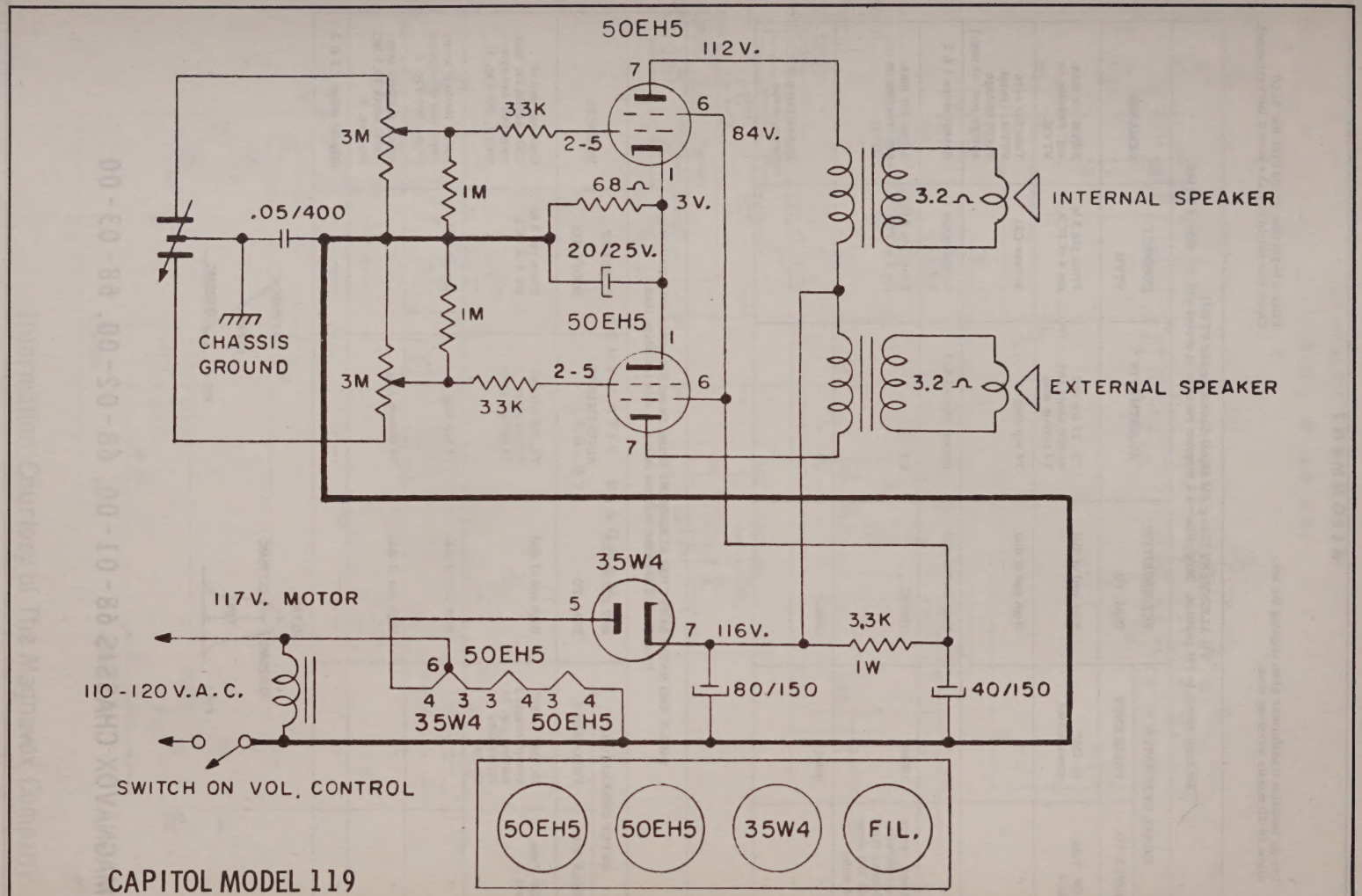


SCHEMATIC DIAGRAM

(68-02)



Information Courtesy of The Magnavox Company



Schematic Diagram Courtesy of Capitol Records, Inc.

PHOTOFACT® Folder

ANDREA CHASSIS
VT-119, VT-119 (50~)

IMPORTANT FILING NOTICE

The TV Folder for this envelope will be found among the first folders in this complete Set of folders.

Merely insert the corresponding folder on this model in this envelope to retain proper filing and indexing order.

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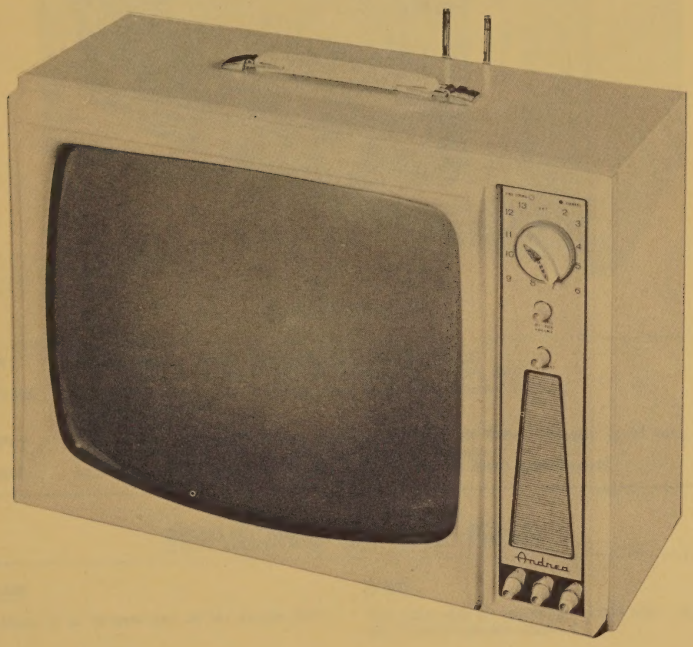
VT-119, VT-119 (50~)



ANDREA CHASSIS
VT-119, VT-119 (50~)

MODEL CG-P1-VT119

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DATE 8-61 SET 544 FOLDER 1

SET 544 FOLDER 1

MODEL CG-P1-VT119

TRADE NAME	Andrea, Models BR-P1-VT119, CG-P1-VT119 (Ch. VT-119) BR-P2-VT119, CG-P2-VT119 (Ch. VT-119, 50∿)
MANUFACTURER	Andrea Radio Corp., 27-01 Bridge Plaza North, Long Island City, N. Y.
TYPE SET	Television Receiver
TUBES	VHF - Eighteen
POWER SUPPLY	Chassis VT-119: 110-120 Volts AC, 60 Cycle RATING 210 Watts, 1.85 Amp. @ 117 Volts AC, 60 Cycle Chassis VT-119 (50∿): 117, 150, 200, 220 Volts AC, 50 Cycle
TUNING RANGE	Channels 2 thru 13 VHF, Video IF 45.75MC, Sound IF 41.25MC (Intercarrier)

SERVICING IN THE FIELD

SAFETY GLASS

The safety glass is an integral part of the picture tube.

FUSE

A fuse is used for horiz-vert sweep circuit protection. (See "Tube Placement Chart" for location.)

TUNER OSCILLATOR ADJUSTMENT

To touch up the VHF Oscillator, remove Channel Selector and Fine Tuning knobs.

AGC

No provision is made to vary the AGC on this receiver.

HORIZONTAL OSCILLATOR FIELD ADJUSTMENT

Coarse adjustment of the Horizontal Hold is accomplished by the proper setting of the Horizontal Frequency Slug (B1). (For location, see "Tube Placement Chart".)

WIDTH

The width may be varied by a Width Coil. (For location, see "Tube Placement Chart".)

HORIZONTAL DRIVE

The horizontal drive may be varied by a Horizontal Drive control. (For location, see "Tube Placement Chart".)

BUZZ ADJUSTMENT

To eliminate intercarrier buzz, adjust the Ratio Detector secondary (A9) located at top of chassis.

CENTERING

Centering is accomplished by 2 magnetic rings, located behind the yoke, on the neck of the picture tube.

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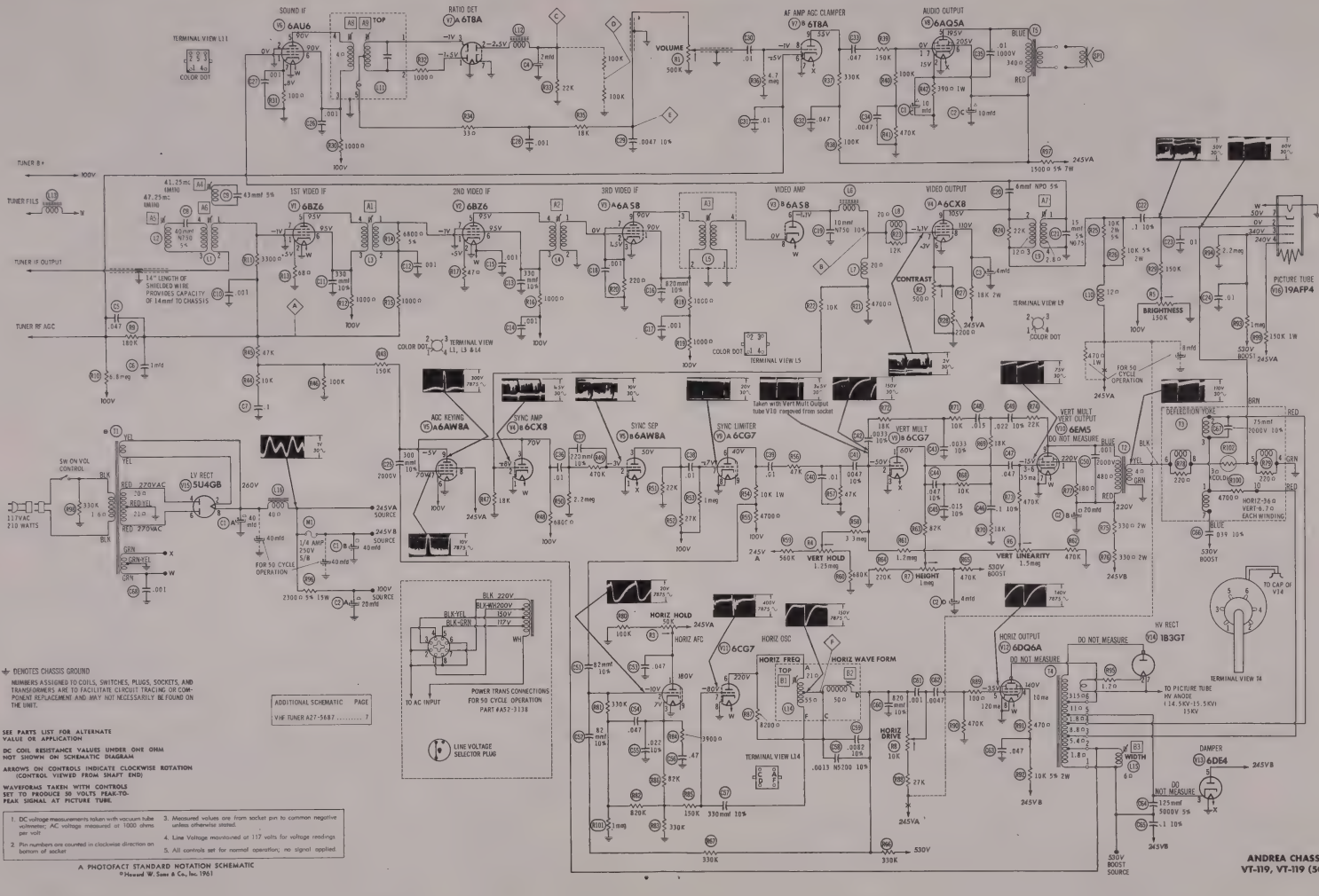
ANDREA CHASSIS
VT-119, VT-119 (50∿)

SET 544 FOLDER 1


SOUND IF
RATIO DET
AF AMP AGC CLAMPER
AUDIO OUTPUT
VOLUME
1ST VIDEO IF
2ND VIDEO IF
3RD VIDEO IF
VIDEO AMP
VIDEO OUTPUT
CONTRAST
BRIGHTNESS
PICTURE TUBE
19AFP4
TUNER B+
TUNER FILS
TUNER IF OUTPUT
TUNER RF AGC
AGC KEYING
SYNC AMP
SYNC SEP
SYNC LIMITER
VERT MULT
VERT OUTPUT
VERT HOLD
HEIGHT
VERT LINEARITY
HORIZ HOLD
HORIZ AFC
HORIZ OSC
HORIZ FREQ
HORIZ WAVE FORM
HORIZ OUTPUT
HV RECT
DAMPER
WIDTH
DEFLECTION YOKE
SW ON VOL CONTROL
LV RECT
117VAC 210 WATTS
POWER TRANS CONNECTIONS FOR 50 CYCLE OPERATION PART #A52-3138
LINE VOLTAGE SELECTOR PLUG
TO AC INPUT
TO CAP OF V14
TO PICTURE TUBE HV ANODE (14.5KV-15.5KV) 15KV
DENOTES CHASSIS GROUND
NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.
SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION
DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM
ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)
WAVEFORMS TAKEN WITH CONTROLS SET TO PRODUCE 30 VOLTS PEAK-TO-PEAK SIGNAL AT PICTURE TUBE.
1. DC voltage measurements taken with vacuum tube voltmeter; AC voltage measured at 1000 ohms per volt
2. Pin numbers are counted in clockwise direction on bottom of socket
3. Measured values are from socket pin to common negative unless otherwise stated.
4. Line Voltage maintained at 117 volts for voltage readings
5. All controls set for normal operation; no signal applied
A PHOTOFACT STANDARD NOTATION SCHEMATIC
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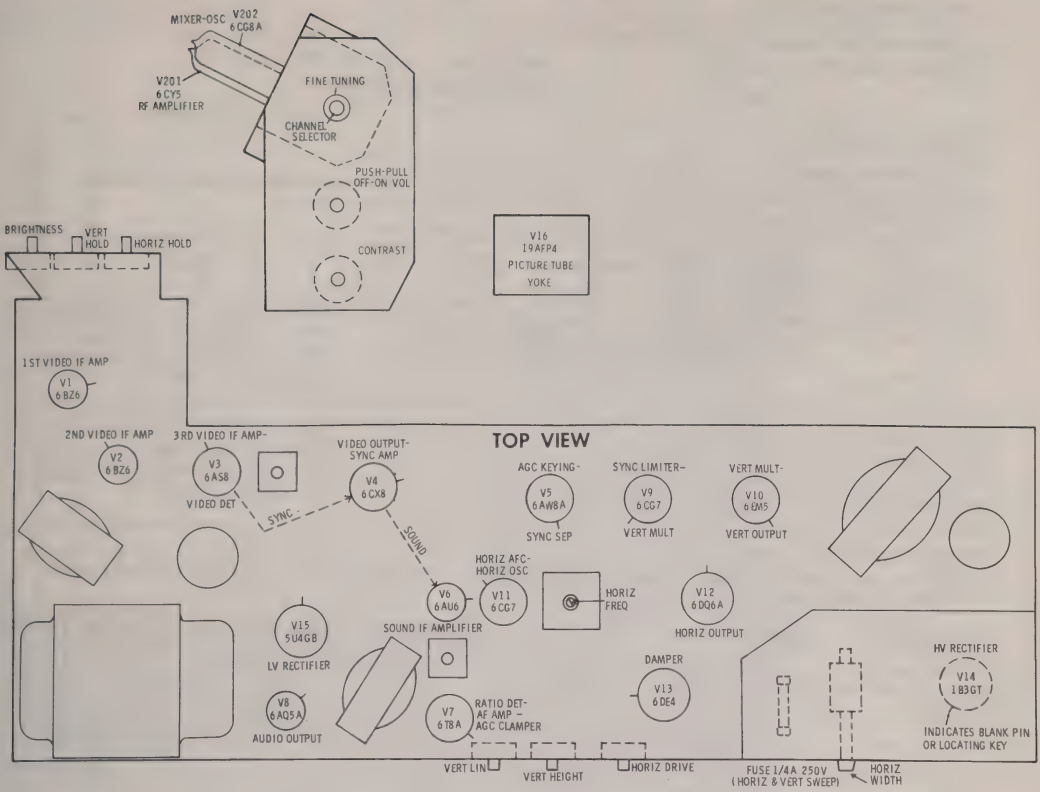
ADDITIONAL SCHEMATIC PAGE
VHF TUNER A27-5687 7
ANDREA CHASSIS VT-119, VT-119 (50~)

TUBE PLACEMENT CHART



TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce indicated symptoms. Refer to tube placement chart for location and type of tube.

POWER SUPPLY FAILURE
No raster, no sound V15

SWEEP FAILURE
No raster, has sound V11, V12, V13, V14, V16
No vertical deflection V9, V19
Poor vert. linearity or foldover V9, V10
Poor horiz. linearity or foldover V11, V12, V13
Narrow picture V11, V12, V13, V15
Vert. off freq. V9, V10
Horiz. off freq. V11

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster V1, V2, V3, V4
No pic, no sound, has snow V201, V202, V1
No pic, has sound, has raster V4, V16
Has pic, no sound V6, V7, V8
Overloaded picture V5

SYNC FAILURE
No vert. sync V4, V5, V9
No horiz. sync V4, V5, V9
No vert. or horiz. sync V4, V5, V9

ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS

Allow a 20 minute warm-up period for the receiver and test equipment.

Suggested Alignment Tools: Al thru A9 ..... GENERAL CEMENT #8282, 8606, 8606-L, 9295, 9440
WALSCO #2526, 2543, 2544, 2545
Mixer Plate Coil ..... GENERAL CEMENT #9296, 9297
WALSCO #2546, 2547

VIDEO IF ALIGNMENT

Connect the negative lead of a 4.5 volt bias supply to point Ⓐ. Positive to chassis.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Disconnect IF Input coil from pin 1 (grid) of 1st Video IF Amp.
Attenuate Sweep Generator Output to maintain between 2 and 3 volts peak to peak on scope.

	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	High side thru .001mfd to pin 1 (grid) of 1st Video IF. Low side to chassis.	44.0MC (10MC Swp.)	41.25MC 42.5MC 43.0MC 45.0MC 45.75MC 47.25MC	Any non-interfering channel	Vert. Amp. thru 10K to point Ⓑ. Low side to chassis. (Across Video Det. load).	A1, A2, A3	Adjust for maximum gain and symmetry of response similar to Fig. 1 with markers as shown. A1 controls position of 45.75MC marker, A2 controls bandwidth and low frequency skirt of curve, and A3 controls tilt. Reconnect IF input coil to grid of 1st Video IF.
2.	Place a thin insulated metal strip between the Mixer-Osc. tube and tube shield. Connect the high side of sweep generator to the metal strip. Low side to chassis.	"	"	"	"	A4, A5, A6	Adjust A4 to place 41.25MC marker in trap notch. Adjust A5 to place 47.25MC marker in other trap notch. Adjust A6 and Mixer Plate coil for maximum flatness and position of 45.75MC marker as in Fig. 1. If necessary repeat steps 1 and 2.

SOUND IF ALIGNMENT

Connect two matched 100K (±1%) resistors in series from point Ⓒ to chassis. The junction of these two resistors is alignment point Ⓓ as shown on the schematic.

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
3.	High side thru .01mfd to point Ⓑ. Low side to chassis.	4.5MC (Unmod.)	Any non-interfering channel	DC probe to point Ⓒ. Common to chassis.	A7, A8	Adjust for maximum deflection.
4.	"	"	"	DC probe to point Ⓓ. Common to point Ⓔ.	A9	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

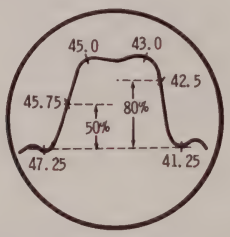
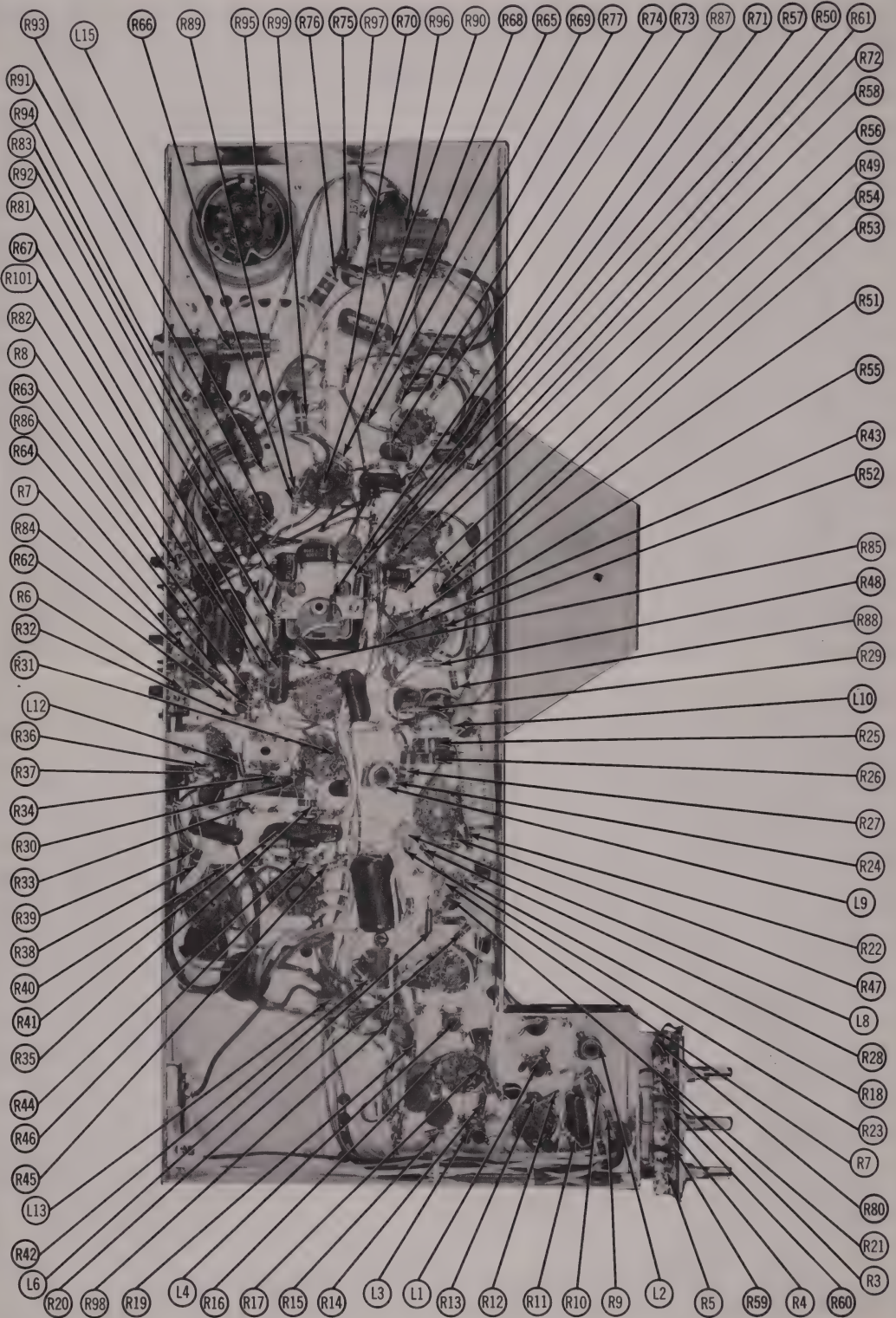
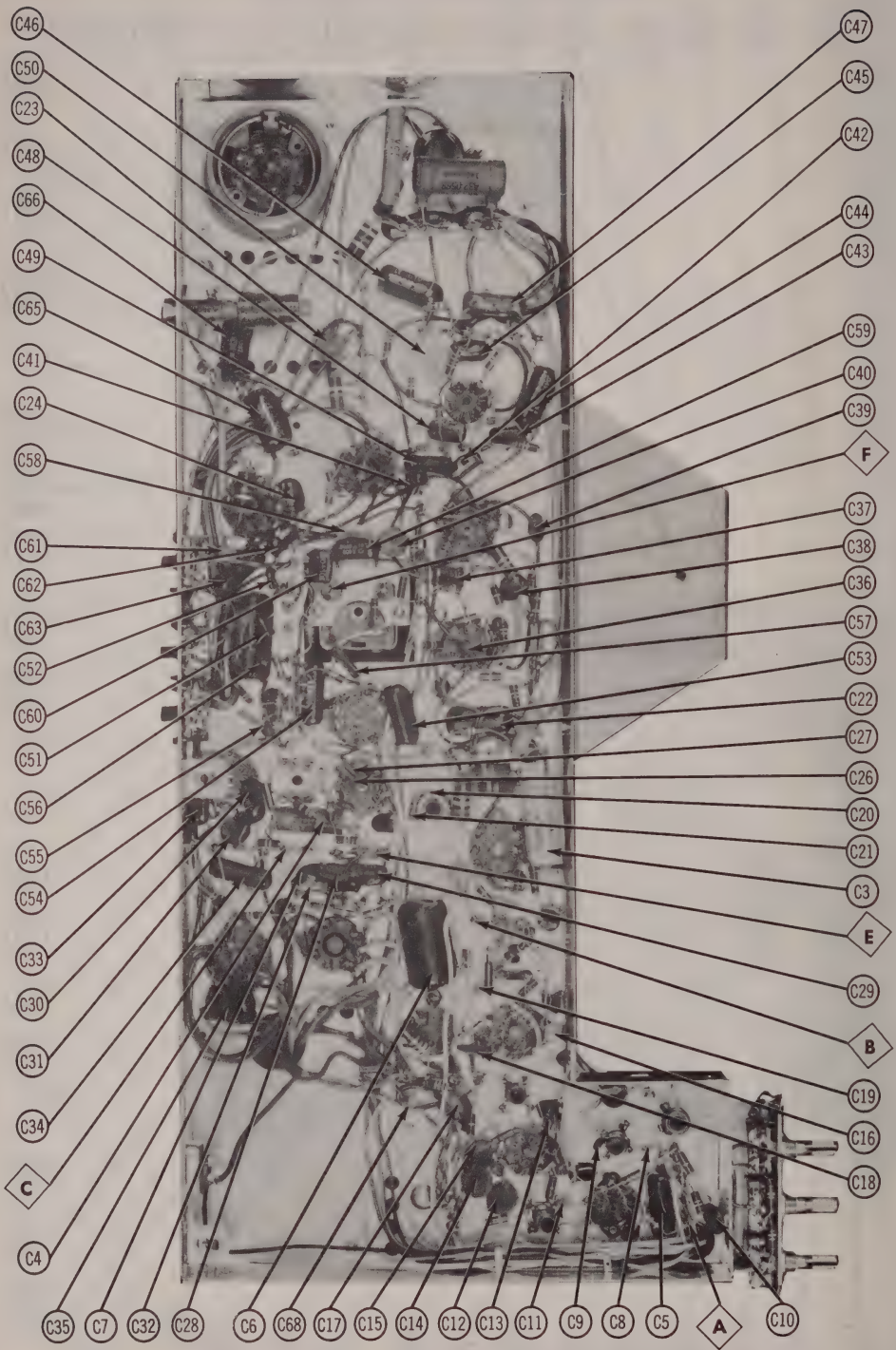


FIG. 1

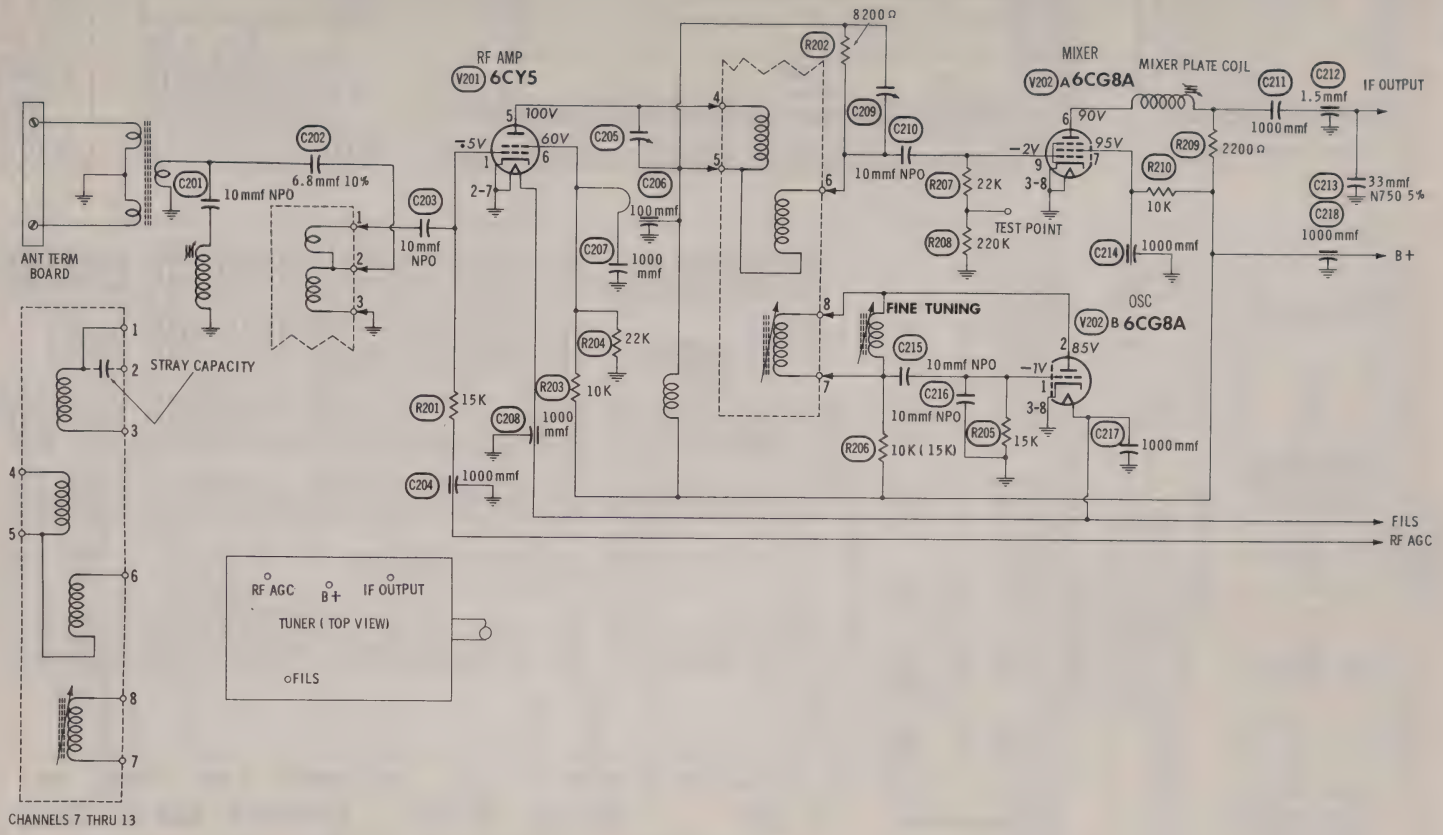


CHASSIS BOTTOM VIEW - RESISTOR, INDUCTOR IDENT.

ANDREA CHASSIS
VT-119, VT-119 (50~)



CHASSIS BOTTOM VIEW - ALIGN., CAPACITOR IDENT.



A PHOTOFACT STANDARD NOTATION SCHEMATIC

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VHF TUNER A27-5687

ANDREA CHASSIS
VT-119, VT-119 (50~)

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	GENERAL ELECTRIC • RAYTHEON • SYLVANIA • USE	TYPE
V1	1st Video IF Amp.	6BZ6
V2	2nd Video IF Amp. -	6BZ6
V3	3rd Video IF Amp. - Video Detector	6AH6
V4	Video Output - Sync Amp.	6CX8
V5	AGC Keying - Sync Sep.	6AW8A
V6	Sound IF Amplifier	6AU6
V7	Ratio Det. - AF Amp. - AGC Clamper	6T8A
V8	Audio Output	6AQ5A
V9	Sync Limiter - Vert. Mult.	6CQT
V10	Vert. Mult. - Vert. Output	6EM5
V11	Horiz. AFC - Horiz. Osc.	6CQT
V12	Horiz. Output	6DQ6A
V13	Damper	6DR4
V14	HV Rectifier	1B3GT
V15	LV Rectifier	5U4GB

PICTURE TUBE

ITEM No.	REPLACEMENT DATA: ANDREA PART No.	GENERAL ELECTRIC PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	NOTES
V16	19AJF24		19AFP4 ①		19AFP4 ③	① Aluminized ③ Silver Screen "85"

ELECTROLYTIC CAPACITORS

ITEM No.	RATING: CAP	VOLT	ANDREA PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	40	450	A36-1349	AFH3-43	C0340	FP378-5	TMT-3742	TVL-3785	
B	240	450							
C	40	25							
C2A	20	450	A36-1370	AFH4-19-10	D0179-3	FP474-5	TMQ-4752	TVL-4632	
B	220	450							
C	40	450							
D	4	450							
C3	4	450	A36-1354	PRM710	BR448	TC697	TD-4-450	TVA-1703	
C4	3	100	A36-1367	PRM705	BR345	TT150X2	TD-2-450	TVA-1701	

FIXED CAPACITORS

ITEM No.	RATING			REMARKS	REPLACEMENT DATA: AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C5	.047	400V			P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	47M-S47
C6	1mfd	100V			P2S8N-1.0		CUB2W1	1DP-1-105	GEM-S	2TM-M1
C7	.1	200V			P2S8N-1	DF-104	CUB2P1	2DP-3-104	GEM-301	2TM-P10
C8	40	N750	5%		C1Q43SU		CCTN-39U	CN7-439	10TCU-Q39	
C9	43		5%		23RS-Q43	CM-193-43SJ				MS-443
C10	.001				BP2D-001	DD-102	BYA10D1	CCD-102	B-Z10	5HK-D10
C11	330		10%		D1-330		L10T33	CCD-331	GP333	10TS-T33
C12	.001				BP2D-001	DD-102	BYA10D1	CCD-102	B-Z10	5HK-D10
C13	330		10%		D1-330		L10T33	CCD-331	GP333	10TS-T33
C14	.001				BP2D-001	DD-102	BYA10D1	CCD-102	B-Z10	5HK-D10
C15	.001				BP2D-001	DD-102	BYA10D1	CCD-102	B-Z10	5HK-D10
C16	330		10%		D1-330		SRS7S3	CCD-331	GP333	10TS-T33
C17	.001				BP2D-001	DD-102	BYA10D1	CCD-102	B-Z10	5HK-D10
C18	.001				BP2D-001	DD-102	BYA10D1	CCD-102	B-Z10	5HK-D10
C19	10	N750	10%		N75D-D10	DTK-10	C10Q1	CCTN-100	CN7-410	10TCU-Q10
C20	8	NPO	5%	#A34-1992			C10V6C			
C21	15	N075	5%	#A34-4981				*		
C22	.1	400V	10%		V84C4P1-10%		PM4P1	4DP-3-104	GEM-1001	4TM-P10
C23	.01				BP2D-01	DD-103	BYA10E	CCD-103	B-110	5HK-E10
C24	.01	800V			P88BN-01	DE-103	CUB4E1	8DP-2-103	GEM-611	8TM-E10
C25	300	2000V	10%	#A37-1616				VCM-35-301K		
C26	.001				BP2D-001	DD-102	BYA10D1	CCD-103	B-Z10	5HK-D10
C27	.001				BP2D-001	DD-102	BYA10D1	CCD-103	B-Z10	5HK-D10
C28	.001				BP2D-001	DD-102	BYA10D1	CCD-103	B-Z10	5HK-D10
C29	.0047	400V	10%		V84C4D47-10%		CUB4D47	4DP-1-472	GEM-16241	4TM-D47
C30	.01	600V			P88EN-01	DE-103	CUB6E	6DP-2-103	GEM-611	6TM-E10
C31	.01				BP2D-01	DD-103	BYA10E	CCD-103	B-110	5HK-E10
C32	.047	400V			P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	47M-S47
C33	.047	400V			P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	47M-S47
C34	.0047	400V			P488N-0047	DE-472	CUB4D47	4DP-1-472	GEM-1247	4TM-D47
C35	.01	1000V			P108N-01	DD6-103	CUB10E	10DP-3-103	GEM-1011	10TM-S10
C36	.01				BP2D-01	DD-103	BYA10E	CCD-103	B-110	5HK-E10
C37	320		10%		1489-00032	TCZ-220	22S7T22	CM-193-22SK	CNC-322	MS-322
C38	.01				BP2D-01	DD-103	BYA10E	CCD-103	B-110	5HK-E10
C39	.01				BP2D-01	DD-103	BYA10E	CCD-103	B-110	5HK-E10
C40	.01				BP2D-01	DD-103	BYA10E	CCD-103	B-110	5HK-E10
C41	.0047	400V	10%		V84C4D47-10%		PM6D47	6DP-1-472	GEM-16247	6TM-D47
C42	.0033	400V	10%		V84C4S33-10%		PM6S33	6DP-1-332	GEM-16233	6TM-S33
C43	.0033	400V	10%		V84C4D33-10%		PM6D33	6DP-1-332	GEM-16233	6TM-D33
C44	.047	400V	10%		V84C4S47-10%		PM6S47	6DP-3-473	GEM-1615	6TM-S47
C45	.015	400V	10%		V84C4S5-10%		PM4S5	4DP-1-153		4TM-S5
C46	.1	400V	10%		V84C4P1-10%		PM4P1	4DP-3-104	GEM-1001	4TM-P10
C47	.047	400V			P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	47M-S47
C48	.015	400V			P488N-015	DD-153	CUB4S5	4DP-1-153	GEM-4115	47M-S5
C49	.033	400V	10%		V84C4S33-10%		PM6S33	6DP-2-333	GEM-6133	6TM-S33
C50	.001	2000V			BYD-10-1000	DE35-103	BYD10D1K	3CCD-102	BY-Z10	
C51	82		10%		1425-00082	TCZ-82	22R5Q82	CM-193-820K	CNC-482	MS-482
C52	82		10%		1489-00082	TCZ-82	22R5Q82	CM-193-820K	CNC-482	MS-482
C53	.047	400V			P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	47M-S47
C54	.047	400V			P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	47M-S47
C55	.033	400V	10%		V84C4S33-10%		PM4S33	4DP-2-333	GEM-1613	47M-S33
C56	.47	200V			P2S8N-47		CUB2P32	2DP-5-474	GEM-3047	2TM-P47
C57	330		10%		1489-00033		33S7T33	CM-193-331K		MS-333
C58	.0033	NS300	10%	#34-2001				*		
C59	.0082	600V	10%		P684CM-0082		DPM5-5D82	6DP-2-822	GEM-16282	6PS-D82
C60	820		10%		1489-00082		82S7T82	CM-193-821K	MCF281	MS-382
C61	.001				BP2D-001	DD-102	BYA10D1	CCD-102	B-Z10	5HK-D10
C62	.0047	400V			P488N-0047	DE-472	CUB6D47	6DP-1-472	GEM-4247	6TM-D47
C63	.047	400V			P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	47M-S47
C64	125	5000V	5%	#A34-1991						
C65	.1	400V	10%		V84C4P1-10%		PM4P1	4DP-3-104	GEM-1001	4TM-P10
C66	.039	600V	10%		P654CM-S39		DPM3S839	6DP-3-393		6PS-S39
C67	75	2000V	10%				HVA20Q75	VCM-20-750K		20TCY-Q75
C68	.01				BP2D-01	DD-102	BYA10E	CCD-102	B-Z10	5HK-D10

\# Andrea Part Number
* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

CONTROLS

ITEM No.	RATING: RESISTANCE	WATTS	REPLACEMENT DATA: ANDREA PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	500K	½	A33-0901	BPL-50	K47B-500K-Z	B13-133 *	PP55A	Volume
B	Shaft			Not Req.	K52B-3	Not Req.	Not Req.	
C	Switch			Not Req.	Not Req.	SK7 *	Not Req.	Push-Pull Off-On
R2A	500Ω	½	A33-0903	B-45	A47-500-S	QJ7-105	U53R	Contrast
B	Shaft			Not Req.	K58-3	Not Req.	Not Req.	
R3A	50K	½	A33-0899	B-31	A47-50K-S	QJ1-133	U39	Horiz. Hold
B	Shaft			Not Req.	K58-3	Not Req.	Not Req.	
R4A	1.25meg	½	A33-0898	B-742	A47-1.5meg-S	QJ1-138	U155	Vert. Hold
B	Shaft			Not Req.	K58-3	Not Req.	Not Req.	
R5A	150K	½	A33-0900	B-43	A47-150K-S	QJ1-238	U413	Brightness
B	Shaft			Not Req.	K58-3	Not Req.	Not Req.	
R6A	1.5meg	½	A33-0894	TT-742	B47-1.5meg-S	BJ1-138	TA165L	Vert. Linearity
B	Shaft			Not Req.	Not Req.	TM4	Not Req.	
R7A	1meg	½	A33-0895	TT-59	B47-1meg-S	BJ1-137	TA16L	Height
B	Shaft			Not Req.	Not Req.	TM4	Not Req.	
R8A	10K	½	A33-0896	TT-14	B47-10K-S	BJ1-115	TA14L	Horiz. Drive
B	Shaft			Not Req.	Not Req.	TM4	Not Req.	

* Factory Assembled Part #PCJ3-133 (SK7).

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA: IRC PART No.	WORKMAN TV PART No.	REMARKS
R9	180K			
R10	6.8meg			
R11	3300Ω			
R12	1000Ω			
R13	68Ω			
R14	6800Ω 5%			
R15	1000Ω			
R16	1000Ω			
R17	470Ω			
R18	1000Ω			
R19	1000Ω			
R20	220Ω			
R21	4700Ω			
R22	10K			
R23	12K			
R24	22K			
R25	10K 5% 2W			
R26	10K 5% 2W			
R27	18K 2W			
R28	2200Ω			
R29	150K			
R30	1000Ω			
R31	100Ω			
R32	1000Ω			
R33	22K			
R34	33Ω			
R35	15K			
R36	1.5meg			
R37	330K			
R38	100K			
R39	33K			
R40	100K			
R41	10K			
R42	390Ω 1W			
R43	150K			
R44	10K			
R45	47K			
R46	100K			
R47	18K			
R48	6800Ω			
R49	470K			
R50	2.2meg			
R51	22K			
R52	27K			
R53	1meg			
R54	10K 1W			
R55	4700Ω			

ITEM No.	RATING	REPLACEMENT DATA: IRC PART No.	WORKMAN TV PART No.	REMARKS
R56	47K			
R57	47K			
R58	3.3meg			
R59	560K			
R60	680K			
R61	1.2meg			
R62	470K			
R63	82K			
R64	220K			
R65	470K			
R66	330K			
R67	330K			
R68	10K			
R69	18K			
R70	18K			
R71	10K			
R72	18K			
R73	470K			
R74	22K			
R75	3300 2W			
R76	3300 2W			
R77	180Ω			
R78	220Ω			
R79	220Ω			
R80	100K			
R81	330K			
R82	820K			
R83	330K			
R84	3900Ω			
R85	150K			
R86	82K			
R87	6800Ω			
R88	27K			
R89	100Ω			
R90	470K			
R91	470Ω			
R92	10K 5% 2W			
R93	1meg			
R94	2.2meg			
R95	1.5Ω			
R96	2300Ω 5% 15W	PW15-2300	15W-SQ-2300	
R97	1500Ω 5% 7W	PW10-1500	10W-SQ-1500	
R98	330K			
R99	150K 1W			
R100	4700Ω			
R101	1meg			
R102	3.0Ω (Cold)			

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA: ANDREA PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	Workman TV PART No.	NOTES
L1A	1st Video IF	A51-0430	TV-156	6221	RTC-8552	T224	
B	41.25MC Trap						
L2	47.25MC Trap	A51-0381	TV-153	6225	RTC-8556	T216	
L3	2nd Video IF	A51-0378	TV-130	6219	RTC-8551	T217	
L4	3rd Video IF	A51-0378	TV-130	6219	RTC-8551	T217	
L5	4th Video IF	A51-0380	TV-126	6234	RTC-8563	T211	
L6	RF Choke (12.5uh)	A51-0430	BC-566	4622	RTC-8524	T261	
L7	Peaking (440uh)	A51-0423	TV-202	6136	RTC-8579	T232	
L8	Peaking (440uh)	A51-0423	TV-202	6136	RTC-8579	T232	
L9	Peaking (380uh)	A51-0424	TV-196	6130	RTC-8576	T216	
B	Sound IF		TV-151	1469	RTC-8603	T249	
L10	Peaking (270uh)	A51-0364	TV-196	6130	RTC-8576	T216	
L11	Ratio Detector	A51-0426	TV-115	6205	RTC-8620	T237	
L12	RF Choke (12.5uh)	A51-0430	BC-566	4622	RTC-8524	T261	
L13	Fil. Choke (3uh)	A51-0418	BC-563	4606	RTC-8517	T267	

COILS (SWEEP CIRCUITS)

ITEM No.	USE	REPLACEMENT DATA: ANDREA PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	Workman TV PART No.	NOTES
L14A	Horiz. Osc.	A51-0428	TV-162	6183	RTC-8612	S8-3		T102	① Drill new mounting hole.
B	Horiz. Waveform								
L15	Width Coil 1.8MH-10MH	A51-0418	MWC-6	6222	WC-8A	WC-23①	WLC-6	T107	

FILTER CHOKE

ITEM No.	RATINGS: CURRENT (Measured)	DC RES.	INDUCTANCE @ CURRENT 1000 (^u)	REPLACEMENT DATA: ANDREA PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
L16	.300A	40Ω	1.2 Hy.	A51-3129	C-2996 ①	C-2543	26C93 ①	C-34X	① Drill new mounting hole(s).

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	SEC. 1	SEC. 2	REPLACEMENT DATA: ANDREA PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T1	117V ② 1.85A	540VCT ② 300A DC	5V ② 2A	A52-3128 Note 1				R-88A	Note 1: Part #A52-3128 used in 220V 50% Chassis.
	SEC. 3	SEC. 4	SEC. 5						
	12.6VCT ② 3.7A								

TRANSFORMERS (SWEEP CIRCUITS)

ITEM No.	USE	REPLACEMENT DATA: ANDREA PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T2	Vert. Output	A52-3106				A-113X	① Use original damping network, rear cover and centering device, if necessary.
T3	Yoke (Horiz. 18.2MH) (110°) (Vert. 12.8MH)	A52-3096		DY-27A ①	Y-52 ①	Y-60-1	
	Rear Cover and Centering Device	ST-3094					
T4	Horiz. Output	A52-3120				D-186 *	

*HORIZONTAL OUTPUT TRANSFORMER CONNECTION DATA

Use Original Width Coil Unless Replacement Type Is Listed

TERMINAL CONNECTIONS	Merit Replacement Connections	Stancor Replacement Connections	Thordarson Replacement Connections	Triad Replacement Connections
6				5
5				4
4				3
3				X
2				2
1				1
Connect Width Coil Across				1 & 2

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE: PRI.	SEC.	REPLACEMENT DATA: ANDREA PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T5	5800Ω	3-4Ω	A52-3104	A-3019	A-8092	26B49	S-6X	

SPEAKER

ITEM No.	TYPE: SIZE	FIELD	V. C. IMP.	REPLACEMENT DATA: ANDREA PART No.	QUAM PART No.	NOTES
SP1	3½" x 5"	PM	3-4Ω	A53-4089	35A05	

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA: ANDREA PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M1	3AG	1/4A 250V S/B	A53-5543	A53-5543	313.250 (3AG 1/4A 250V S/B)	357001	MDL 1/4	4405

MISCELLANEOUS

ITEM No.	PART NAME	REPLACEMENT DATA: ANDREA PART No.	NOTES
M3	Tuner (VHF)	A27-5681 *	#STANDARD COIL REPLACEMENT #GG-4230-A
M3	Antenna	25073-6	#TD REPLACEMENT #TA380

* Part No. A27-5687 may be used in some versions.

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Mask	A26-5687	
Knob	A26-5689	Channel Selector
Knob	A26-5690	Fine Tuning
Knob	A26-5691	Horiz. Hold, Vert. Hold, Volume, Brightness
Handle	A26-5683	Gray Cabinet
Handle	A26-5684	Beige & White Cabinet

TV PARTS LIST AND DESCRIPTIONS (Continued)

WIRING DATA

High Voltage Lead	Use BELDEN No. 8869
Shielded Hook-up Wire	Use BELDEN No. 8885 (Single Conductor) 8738 (Two Conductor)
General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord (Interlock Type)	Use BELDEN No. 8874
300Ω Tuner Input Lead	Use BELDEN No. 8225
300Ω Antenna Lead-in	Use BELDEN No. 8230 or 8275
Antenna Rotor Cable	Use BELDEN No. 8464 (Flat) or 8484 (Round) - 4 Conductor 8485 (Round) - 5 Conductor 8488 (Round) - 8 Conductor

VHF TUNER PARTS LIST AND DESCRIPTIONS

TUBES

• GENERAL ELECTRIC •			• RAYTHEON • SYLVANIA •		
ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V201	RF Amp.	6CY5	V202	Mixer - Osc.	6CG8A

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C201	10 NPO		NPO-DI 10	DTZ-10	C10QIC	CCTO-100	CNO-410	10TCC-QI0
C202	6.8 10%		NPO-SI 6.8	TCZ-6R8	C10V68C	CCTO-6R8	CNO-568	10TCC-V68
C203	10 NPO		NPO-DI 10	DTZ-10	C10QIC	CCTO-100	CNO-410	10TCC-QI0
C204	1000		EF-001	MFT-1000		CCF-102	CT280A	
C205								
C206	100		EF-0001	MFT-100				
C207	1000		BPD-001	DD-102	BYA10DI	CCD-102	B-210	5HK-DI0
C208	1000		EF-001	MFT-1000		CCF-102	CT280A	
C209								
C210	10 NPO		NPO-DI 10	DTZ-10	C10QIC	CCTO-100	CNO-410	10TCC-QI0
C211	1000		BPD-001	DD-102	BYA10DI	CCD-102	B-210	5HK-DI0
C212	1.5							
C213	33 N750 5%		N750-SI 33	TCN-33	C10Q33U	CCTN-330	CN7-433	10TCU-Q33
C214	1000		EF-001	MFT-1000		CCF-102	CT280A	
C215	10 NPO		NPO-DI 10	DTZ-10	C10QIC	CCTO-100	CNO-410	10TCC-QI0
C216	10 NPO		NPO-DI 10	DTZ-10	C10QIC	CCTO-100	CNO-410	10TCC-QI0
C217	1000		BPD-001	DD-102	BYA10DI	CCD-102	B-210	5HK-DI0
C218	1000		EF-001	MFT-1000		CCF-102	CT280A	

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA			ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN TV PART No.	REMARKS			IRC PART No.	WORKMAN TV PART No.	REMARKS
R201	15K				R206	10K			(15K) *
R202	8200Ω				R207	22K			
R203	10K				R208	220K			
R204	22K				R209	2200Ω			
R205	15K				R210	10K			

* Alternate Value

VHF TUNER ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS

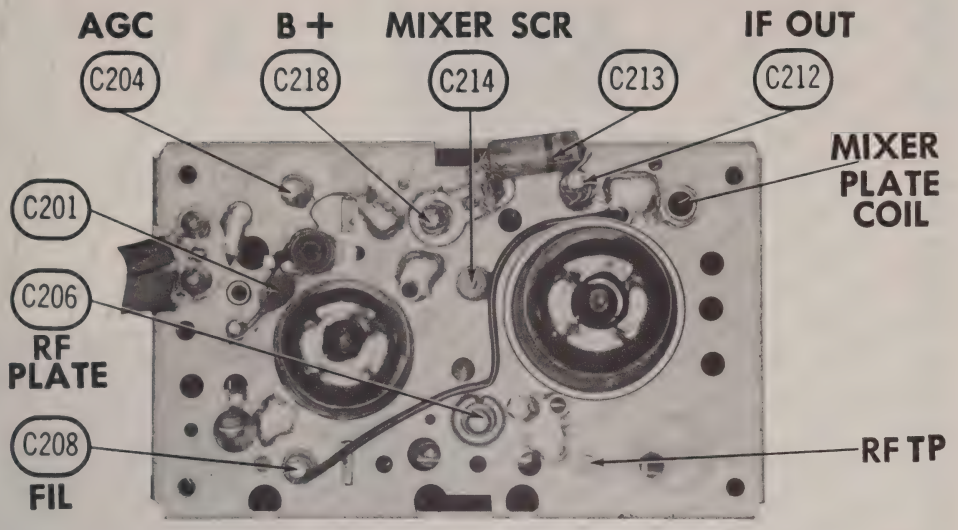
Suggested Alignment Tools: GENERAL CEMENT #5009, 8195, 8274, 8275, 8728, 8729, 8987, 8988, 8989
WALSCO #2515, 2531, 2532

VHF OSCILLATOR ALIGNMENT

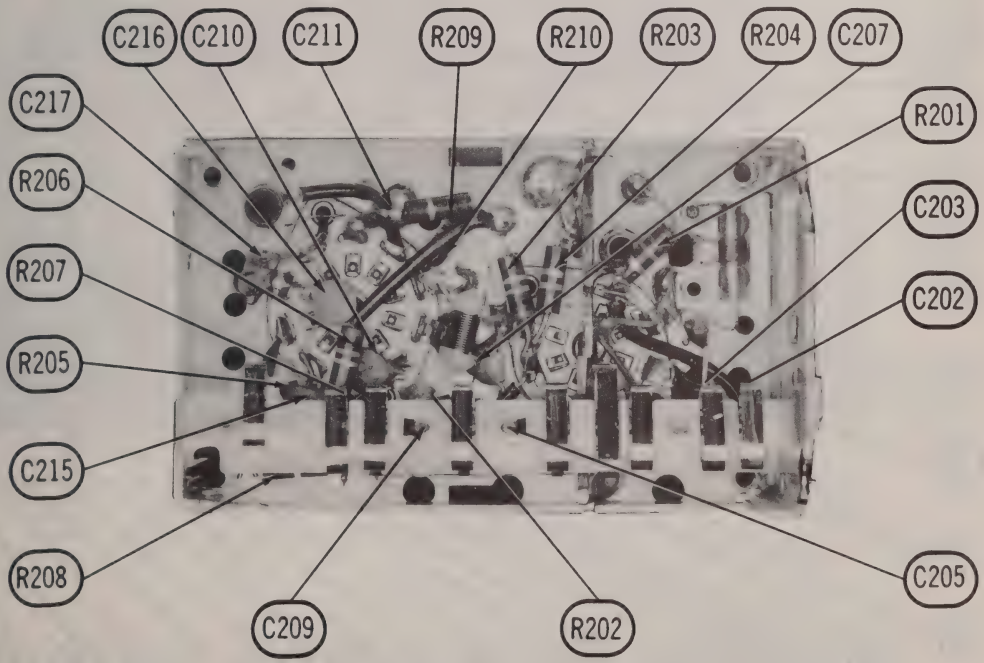
The individual channel adjustment screws are accessible one at a time thru a hole in the front of the tuner, as the Channel Selector is rotated. Set the Fine Tuning to the center of its range and switch to the channel to be adjusted. Adjust for best picture and sound.

VHF RF AND MIXER ALIGNMENT

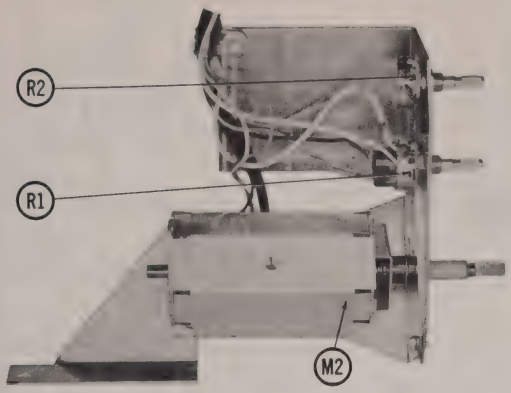
This portion of the tuner has been properly aligned at the factory and is very stable. Alignment of this portion should not be attempted in the field.



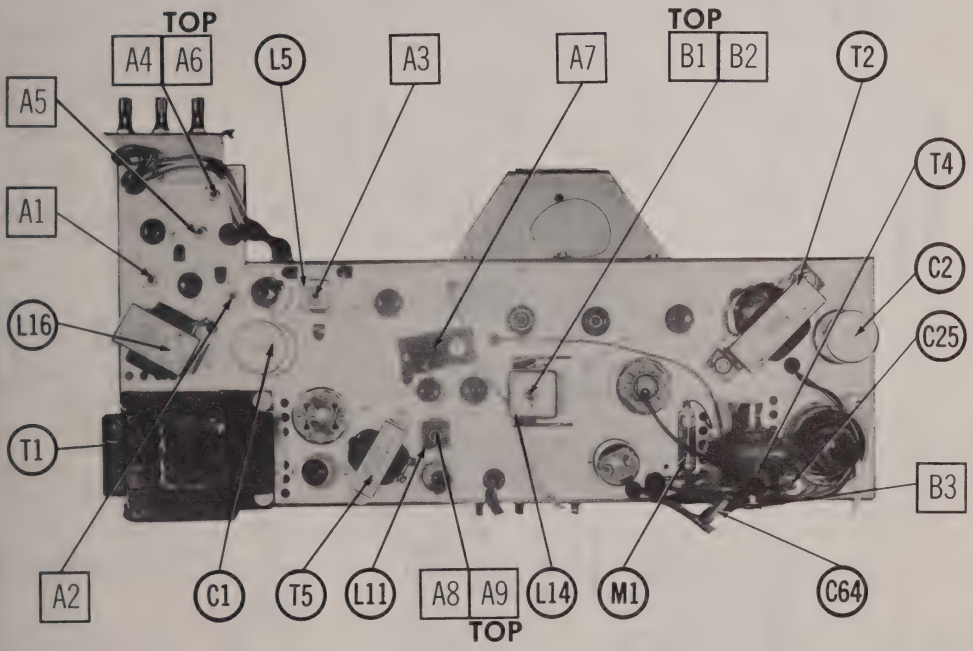
VHF TUNER A27-5681 - TOP VIEW



VHF TUNER A27-5681 - BOTTOM VIEW

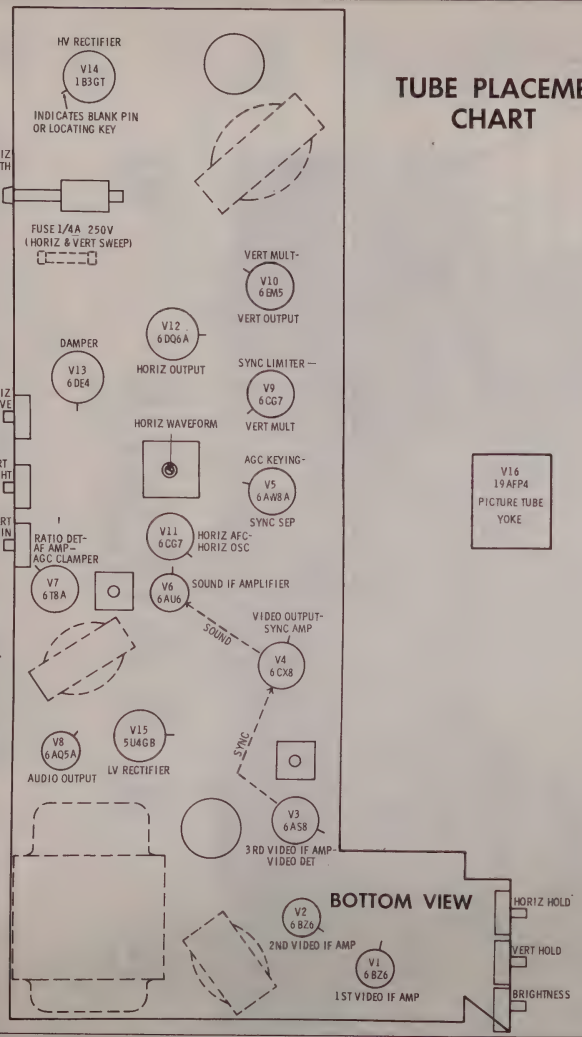


VHF TUNER -
CONTROL PANEL



CHASSIS - TOP VIEW

TUBE PLACEMENT CHART

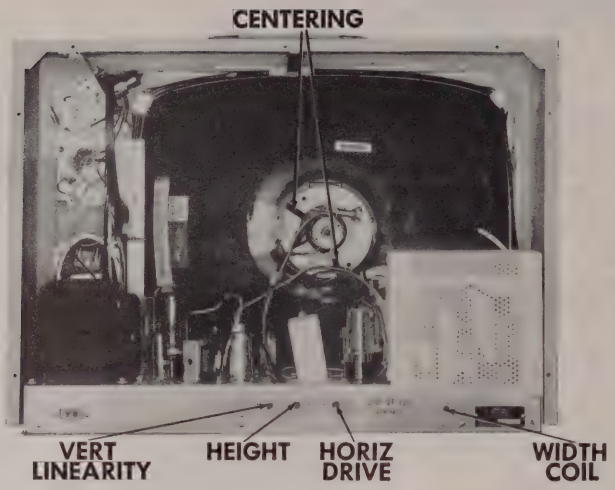


RESISTANCE MEASUREMENTS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6BZ6	150K	68Ω	FIL	FIL	†3300Ω	†3300Ω	0Ω		
V2	6BZ6	148K	47Ω	FIL	FIL	†3300Ω	†3300Ω	0Ω		
V3	6AS8	†4300Ω	.1Ω	220Ω	FIL	FIL	4500Ω	220Ω	.1Ω	†4300Ω
V4	6CX8	0Ω	8500Ω	†9100Ω	FIL	FIL	•20Ω	4500Ω	†18K	†5000Ω
V5	6AW8A	0Ω	2.7meg	†20K	FIL	FIL	†2300Ω	†9100Ω	†40Ω	250K
V6	6AU6	2.8Ω	0Ω	FIL	FIL	†3300Ω	†3300Ω	100Ω		
V7	6T8A	519K	22K	518K	FIL	FIL	310K	0Ω	4.7meg	†430K
V8	6AQ5A	NC	390Ω	FIL	FIL	†1900Ω	†1500Ω	570K		
V9	6CG7	• †600K	• 2meg	0Ω	FIL	FIL	†16K	†1meg	0Ω	NC
V10	6EM5	†880Ω	NC	• 1.5meg	FIL	FIL	• 1.5meg	0Ω	NC	†1200Ω
V11	6CG7	• †30K	900K	380K	FIL	FIL	†37K	480K	0Ω	NC
V12	6DQ6A	TP	FIL	TP	†10K	470K	TP	FIL	0Ω	TOP CAP †11Ω
V13	6DE4	TP	NC	310K	NC	†40Ω	TP	FIL	FIL	
V14	1B3GT	PINS 1 THRU 8 HAVE INFINITE RESISTANCE								TOP CAP †325Ω
V15	5U4GB	TP	¶	NC	20Ω	NC	21Ω	NC	¶	
V16	19AFP4	FIL	5Ω	†800K	†150K	NC	NC	200K	FIL	
V201	6CY5	325K	0Ω	FIL	FIL	†2300Ω	†11K	0Ω		
V202	6CG8A	15K	†12K	0Ω	FIL	FIL	†4500Ω	†12K	0Ω	242K
ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
• THIS READING WILL VARY. CONTROL SET FOR NORMAL OPERATION.
† MEASURED FROM PIN 2 OF V15.
† MEASURED FROM PIN 3 OF V13.

NC NO CONNECTION
TP TIE POINT



CABINET—REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Suggested Alignment Tools: GENERAL CEMENT #8721, 8722
WALSCO #2519

Turn the set on and tune in a TV station, preferably with a test pattern.

Adjust the Horizontal Drive control until a vertical white line appears in the picture, then back off until the drive line just disappears.

Set Horizontal Frequency Slug (B1) $\frac{1}{2}$" above can.

Connect low capacity probe of scope to point (F). Low side to chassis. Set Brightness control for normal brightness.

Turn Horizontal Hold control fully clockwise.

Adjust Horizontal Waveform Slug (B2) for waveform similar to Fig. 2 with the broad and narrow peaks of equal amplitudes.

Turn Horizontal Frequency Slug (B1) counterclockwise until the picture drops out of sync, then turn clockwise until the picture locks in and straightens out at top. Continue to turn clockwise one half turn.

Set Horizontal Hold control to the center of its lock-in range.

Adjust Horizontal Width Slug (B3) for a picture slightly wider than necessary to fill the picture mask horizontally.

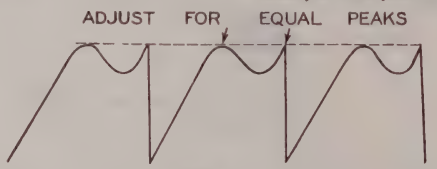


FIG. 2

DISASSEMBLY INSTRUCTIONS

CHASSIS AND PICTURE TUBE ASSEMBLY REMOVAL

1. Disconnect tuner leads from antenna terminal strip.
2. Remove 10 metal screws holding rear cover.
3. Remove rear cover.
4. Remove 7 push-on type knobs at front.
5. Remove 3 screws holding tuner and control panel.
6. Remove 1 screw at rear holding bracket from picture tube to chassis.
7. Disconnect speaker leads.
8. Remove 3 chassis bolts.
9. Remove chassis and picture tube assembly.

PHOTOFACT® Folder

PACKARD-BELL MODELS 17VT11, 19VT1, 23VT1 (Ch. V8-7, V8-9)

IMPORTANT FILING NOTICE

The TV Folder for this envelope will be found among the first folders in this complete Set of folders.

Merely insert the corresponding folder on this model in this envelope to retain proper filing and indexing order.

PACKARD-BELL MODELS 17VT11, 19VT1, 23VT1 (Ch. V8-7, V8-9)

MODEL 23VT1

PACKARD-BELL MODELS 17VT11, 19VT1, 23VT1 (Ch. V8-7, V8-9)

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The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1961 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America

SET 544 FOLDER 2

PHOTOFACT® Folder

PACKARD-BELL MODELS 17VT11, 19VT1, 23VT1 (Ch. V8-7, V8-9)

PACKARD-BELL MODELS 17VT11, 19VT1, 23VT1 (Ch. V8-7, V8-9)

MODEL 23VT1

CAUTION

ONE SIDE OF AC LINE CONNECTED TO CHASSIS.

Care should be exercised when connecting test equipment or physically contacting chassis. Isolation devices employed by manufacturer should be checked and properly connected before returning receiver to owner.

TRADE NAME	Packard-Bell, Models 17VT11, 19VT1, 23VT1 (Chassis V8-7 or V8-9)
MANUFACTURER	Packard-Bell Electronics Corp., Service Div., 1920 So. Figueroa St., Los Angeles 7, California
TYPE SET	Television Receiver
TUBES	VHF - Fifteen UHF - Sixteen
POWER SUPPLY	110-120 Volts AC, 60 Cycle RATING VHF - 130 Watts, 1.3 Amp. @ 117 Volts AC
TUNING RANGE	Channels 2 thru 13 VHF, 14 thru 83 UHF, Video IF 45.75MC, Sound IF 41.25MC (Intercarrier)

SERVICING IN THE FIELD

SAFETY GLASS REMOVAL

Remove 3 screws (under cabinet) holding front bottom trim. Tilt safety glass out and remove.

FUSE DEVICE

A 7.5Ω fusible resistor is used for low voltage power supply protection. (For location, see "Tube Placement Chart".)

TUNER OSCILLATOR ADJUSTMENT

To touch up the VHF Oscillator, remove Channel Selector and Fine Tuning knobs.

FOCUS

The focus may be varied by means of a Focus control. (See "Tube Placement Chart" for location.)

HORIZONTAL OSCILLATOR FIELD ADJUSTMENT

The Horizontal Frequency Slug is used for the Horizontal Hold. (For location, see "Tube Placement Chart".)

CENTERING

Centering is accomplished by 2 magnetic rings, located behind the yoke, on the neck of the picture tube.

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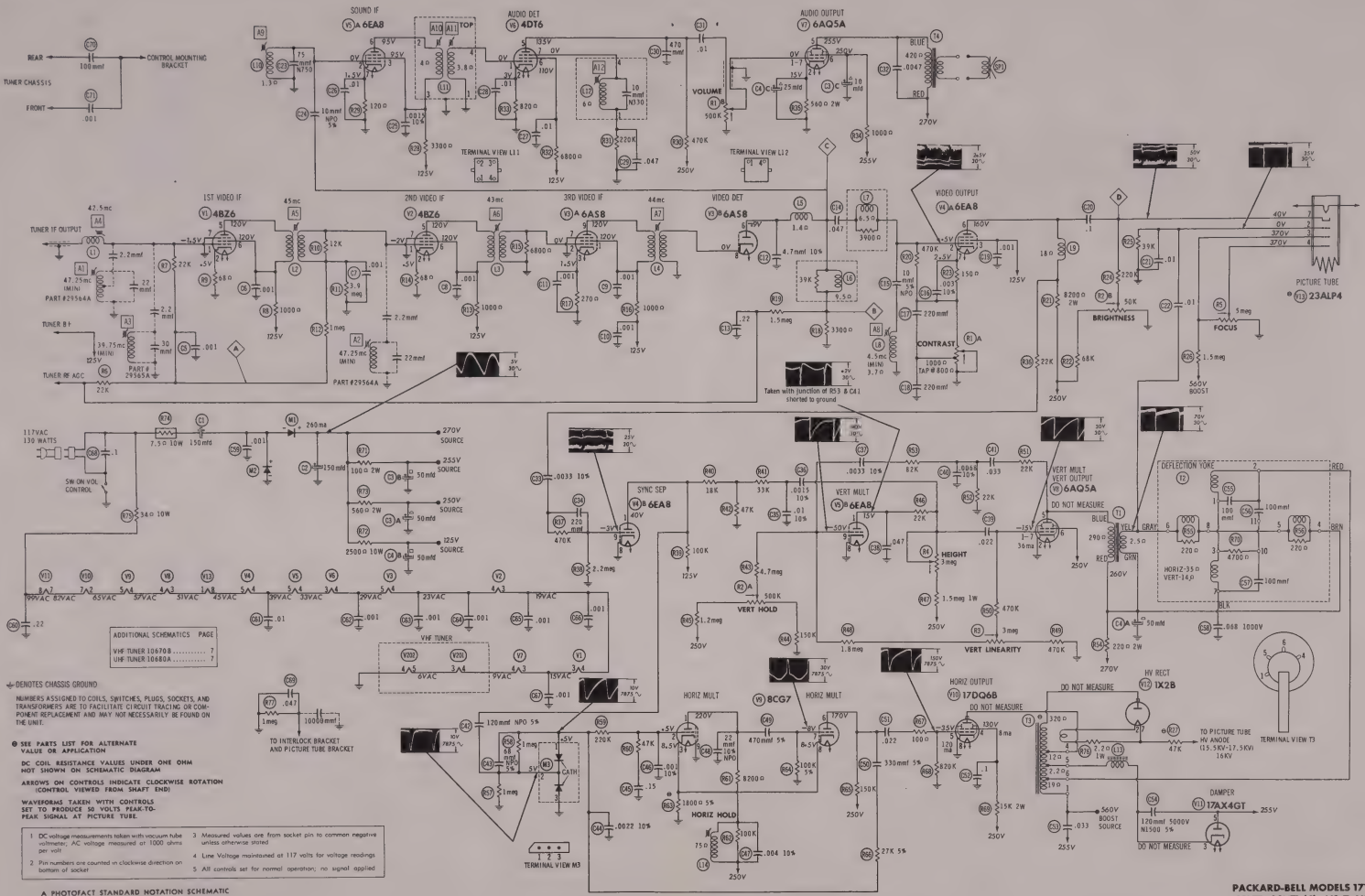
KA790

SET 544 FOLDER 2


SOUND IF
AUDIO DET
AUDIO OUTPUT
VOLUME
TERMINAL VIEW L11
TERMINAL VIEW L12
1ST VIDEO IF
2ND VIDEO IF
3RD VIDEO IF
VIDEO DET
VIDEO OUTPUT
TUNER IF OUTPUT
TUNER B+
TUNER RF AGC
PART #29564A
PART #29565A
CONTRAST
BRIGHTNESS
FOCUS
PICTURE TUBE
117VAC 130 WATTS
SW-ON VOL CONTROL
270V SOURCE
255V SOURCE
250V SOURCE
125V SOURCE
SYNC SEP
VERT MULT
VERT MULT VERT OUTPUT
DEFLECTION YOKE
HEIGHT
VERT HOLD
VERT LINEARITY
HORIZ MULT
HORIZ OUTPUT
HV RECT
TERMINAL VIEW T3
TERMINAL VIEW M3
HORIZ HOLD
DAMPER
VHF TUNER
TO INTERLOCK BRACKET AND PICTURE TUBE BRACKET
ADDITIONAL SCHEMATICS PAGE
VHF TUNER 106708 7
UHF TUNER 10680A 7
DENOTES CHASSIS GROUND
NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.
SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION
DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM
ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)
WAVEFORMS TAKEN WITH CONTROLS SET TO PRODUCE 50 VOLTS PEAK-TO-PEAK SIGNAL AT PICTURE TUBE.
1 DC voltage measurements taken with vacuum tube voltmeter. AC voltage measured at 1000 ohms per volt
2 Pin numbers are counted in clockwise direction on bottom of socket
3 Measured values are from socket pin to common negative unless otherwise stated
4 Line Voltage maintained at 117 volts for voltage readings
5 All controls set for normal operation; no signal applied
A PHOTOFACT STANDARD NOTATION SCHEMATIC
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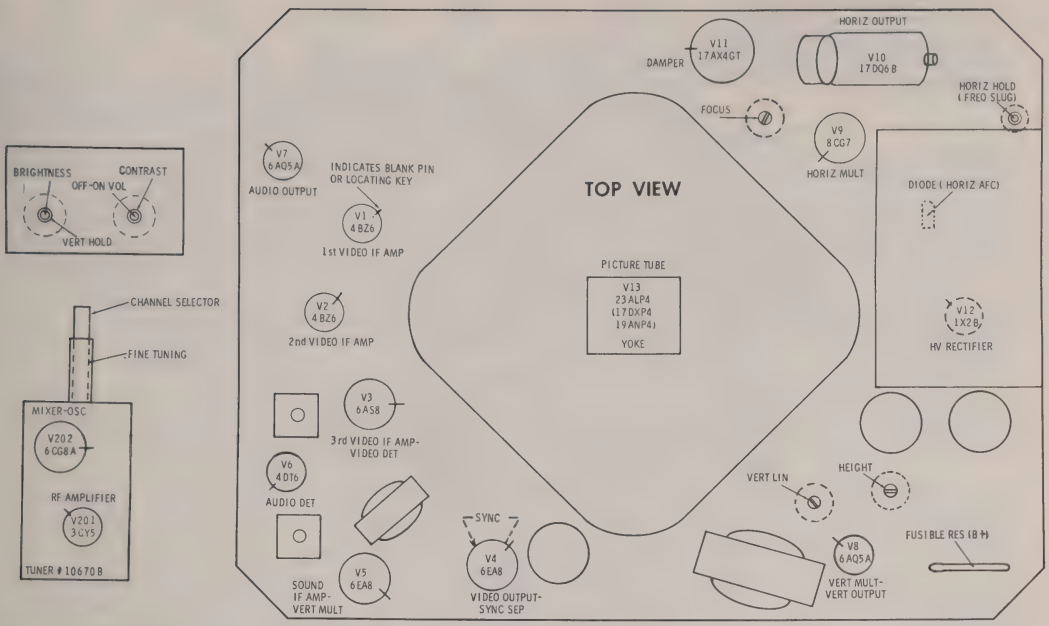
PACKARD-BELL MODELS 17VT11, 19VT1, 23VT1 (Ch. V8-7, V8-9)

TUBE PLACEMENT CHART



TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce indicated symptoms. Refer to tube placement chart for location and type of tube.

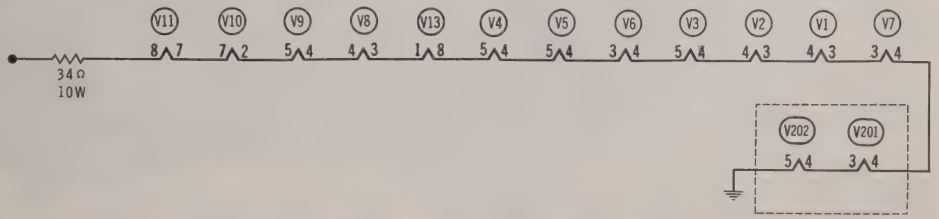
POWER SUPPLY FAILURE
No raster, no sound Fusible Resistor (B+), Rectifiers (B+)

SWEEP FAILURE
No raster, has sound V9, V10, V11, V12, V13
No vertical deflection V5, V8
Poor vert. linearity or foldover V5, V8
Poor horiz. linearity or foldover V9, V10, V11
Narrow picture V9, V10, V11, Rectifiers (B+)
Vert. off freq. V5, V8
Horiz. off freq. Diode (Horiz. AFC), V9

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster V1, V2, V3
No pic, no sound, has snow V201, V202, V1
No pic, has sound, has raster V4, V13
Has pic, no sound V5, V6, V7

SYNC FAILURE
No vert. sync V4
No horiz. sync V4
No vert. or horiz. sync V4

This receiver employs tubes used in a series filament network, an open filament in any tube will cause the set to be inoperative. (See circuit below.)



ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS

Use an ISOLATION TRANSFORMER TO PROTECT the Test Equipment.
The High Voltage lead should be securely taped and kept away from the chassis.
Allow a 20 minute warm-up period for the receiver and test equipment.
Suggested Alignment Tools:
A1 thru A7, A9 thru A12 ... GENERAL CEMENT #8721, 8722
WALSCO #2519
A8 ..... GENERAL CEMENT #8282, 8606, 8606L, 9091
WALSCO #2526, 2541, 2543, 2544
Mixer Plate Coil ..... GENERAL CEMENT #9296, 9297
WALSCO #2546, 2547

VIDEO IF ALIGNMENT

Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Use only enough sweep generator output to provide a usable pattern on scope.
Connect the negative lead of a 3 volt bias supply to point (A). Positive to chassis.

	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	High side to ungrounded tube shield floating over Mixer-Osc. (V202), Low side to chassis.	Not used	47.25MC (Unmod)	Any non-interfering channel	USE VTVM DC probe thru 22K to point (B). Common to chassis. (Across Video Det. load)	A1, A2	Adjust for MINIMUM deflection. (Trap not used in some models).
2.	"	"	39.75MC	"	"	A3	"
3.	"	"	45.0MC	"	"	Mixer Plate Coil	Adjust for maximum deflection.
4.	"	"	42.5MC	"	"	A4	"
5.	"	"	45.0MC	"	"	A5	"
6.	"	"	43.0MC	"	"	A6	"
7.	"	"	44.0MC	"	"	A7	"
8.	Across antenna terminals with 120Ω resistor in each lead.	63.0MC (10MC Swp)	41.25MC 43.3MC 45.0MC 45.75MC	3	Vert. Amp. thru 22K to point (B). Low side to chassis.		Check for response similar to Fig. 1. If necessary, retouch A4 and A6 to control low frequency side of curve, A5 and Mixer Plate Coil to control high frequency side.

4.5MC TRAP ALIGNMENT

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
9	High side thru .001mfd to point (C). Low side to chassis.	4.5MC (Unmod)	Any non-interfering channel	RF probe to point (D). Common to chassis.	A8	Adjust for MINIMUM deflection.

SOUND IF ALIGNMENT

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
10	High side thru .001mfd to point (C). Low side to chassis.	4.5MC (Unmod)	Any non-interfering channel	RF probe to pin 7 (grid 3) of Audio Detector. Common to chassis.	A9, A10, A11	Detune A12 to the point where the Sound Detector ceases to oscillate. (This is determined by turning signal generator output to zero and adjusting A12 until meter reads zero). Increase generator output until a voltage is indicated and adjust A9 and A10 for maximum deflection. Reduce signal to a low level and adjust A11 for maximum deflection. (Be sure circuit is not oscillating.)
11.	Disconnect test equipment and tune in a TV signal. Adjust A12 for maximum undistorted sound. Reduce signal level until a hiss is heard in the sound. Retouch A11 for best sound.					

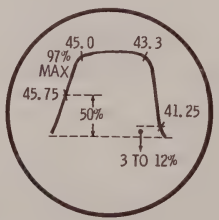
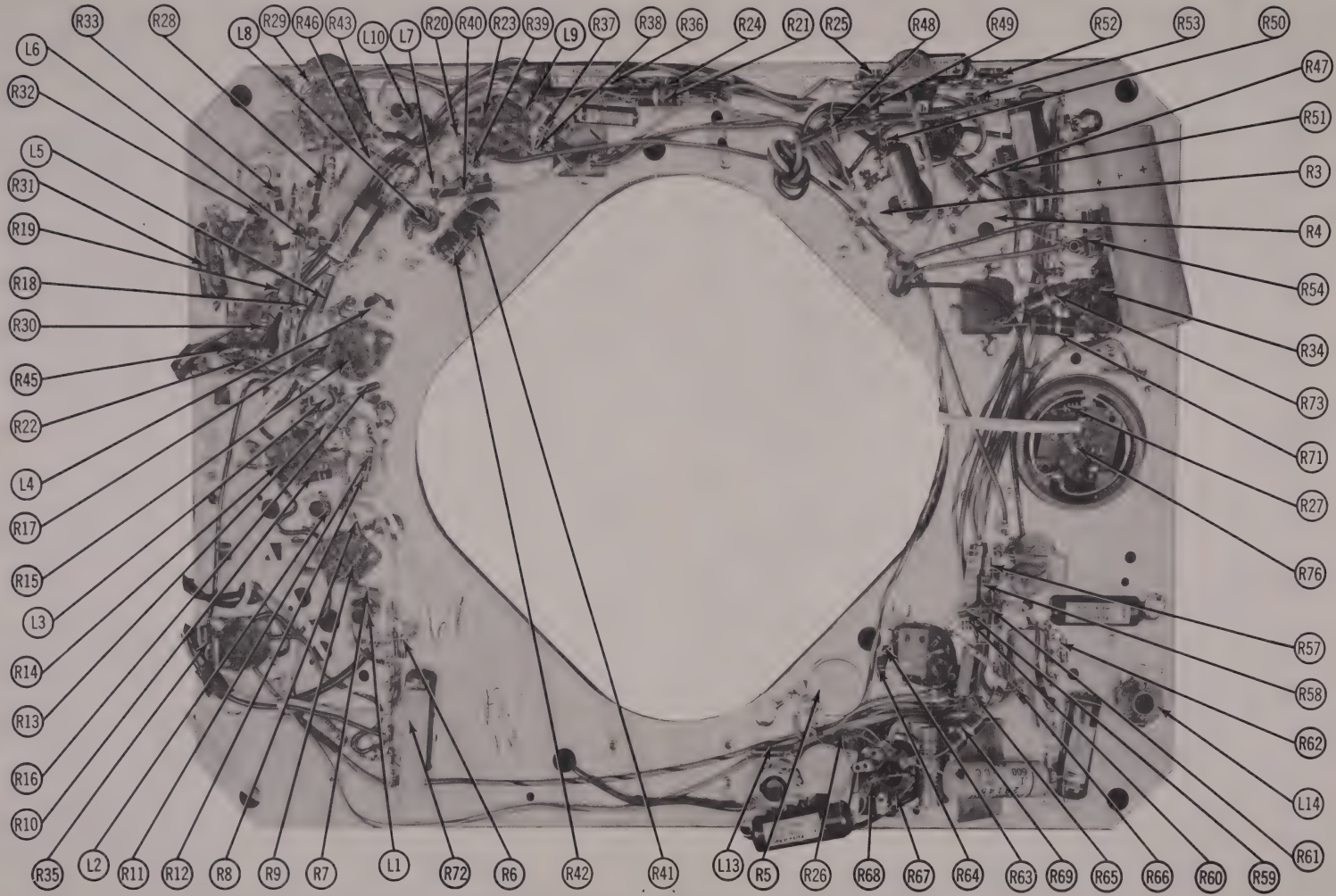
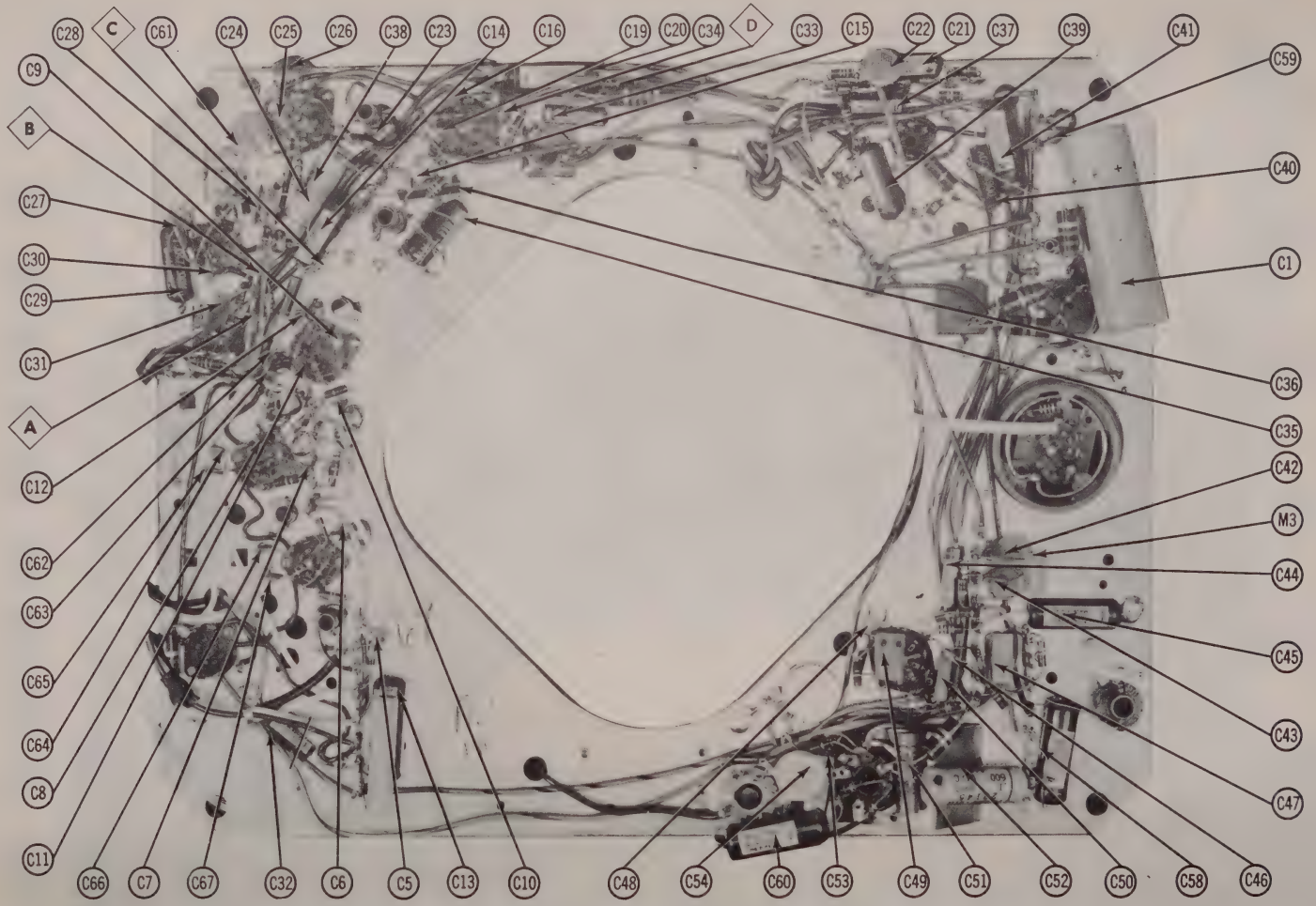


FIG.1

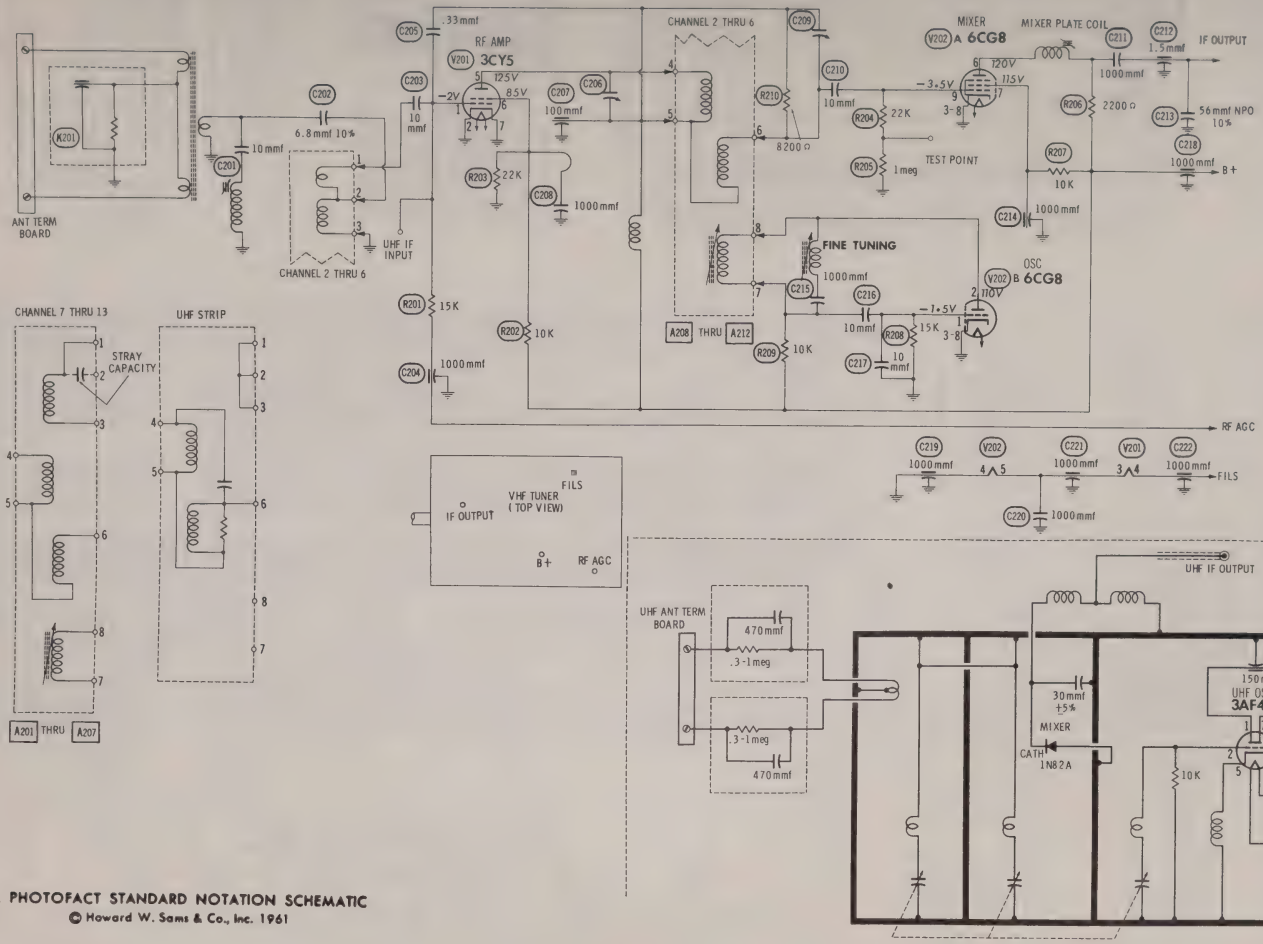
ALIGNMENT IDENTIFICATION PHOTOS PAGES 6, 13



CHASSIS BOTTOM VIEW - RESISTOR, INDUCTOR IDENT.



CHASSIS BOTTOM VIEW - ALIGN., CAPACITOR, MISC. IDENT.



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VHF TUNER 10670B

UHF TUNER 10680A

PACKARD-BELL MODELS 17VT11, 19VT11, 23VT11 (Ch. V8-7, V8-9)

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	GENERAL ELECTRIC USE	GENERAL ELECTRIC TYPE	RAYTHEON USE	RAYTHEON TYPE	SYLVANIA USE	SYLVANIA TYPE
V1	1st Video IF Amp.	4BS8	V6	Audio Detector		6DT6
V2	2nd Video IF Amp.	4BZ6	V7	Audio Output		6AQ5A
V3	3rd Video IF Amp. - Video Detector	6AS6	V8	Vert. Mult. - Vert. Output		6AQ5A
V4	Video Output - Sync Sep.	6EA8	V9	Horiz. Mult.		6CG7
V5	Sound IF Amp. - Vert. Mult.	6EA8	V10	Horiz. Output		17DQ8B
			V11	Damper		17AX4GT
			V12	HV Rectifier		1X2B

PICTURE TUBE

ITEM No.	REPLACEMENT DATA: Packard-Bell PART No.	GENERAL ELECTRIC PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	NOTES
V13	23ALP4 17DXP4 19ANP4		23ALP4 ② 17DXP4 ① 19ANP4 ①	17DXP4 ①	23ALP4 ② 17DXP4 ③	① Aluminized ② Silver Screen "85"

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP	RATING VOLT	Packard-Bell PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1	150	200	34159	PRU-100		TC693	TD-150-200	TVA-1575	
C2	150	350	34160B	AFHR-43		FP40.4	TMB-1660		
C3A	450	350	34190	AFH3-43	C0220	FP576.8	TMT-3436	TVL-3765	
B	250	350							
C	125	350							
C4A	450	350	34187	AFH3-133	C1070	FP384.7	TMT-3367	TVL-3764.3	
B	250	350							
C	125	25							

FIXED CAPACITORS

ITEM No.	RATING	Packard-Bell Part Number	REPLACEMENT DATA: AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	EMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C5	.001		BPD-001	DD-102	BYAI01D	CCD-102	B-210	5HK-D10
C6	.001		BPD-001	DD-102	BYAI01D	CCD-102	B-210	5HK-D10
C7	.001		BPD-001	DD-102	BYAI01D	CCD-102	B-210	5HK-D10
C8	.001		BPD-001	DD-102	BYAI01D	CCD-102	B-210	5HK-D10
C9	.001		BPD-001	DD-102	BYAI01D	CCD-102	B-210	5HK-D10
C10	.001		BPD-001	DD-102	BYAI01D	CCD-102	B-210	5HK-D10
C11	.001		BPD-001	DD-102	BYAI01D	CCD-102	B-210	5HK-D10
C12	4.7	10%	NPO-SI 4.7	TCE-4R7	C0V47C	CCTO-4R7	CNO-547	10TCC-V47
C13	.22	200V	P288N-22		CUBZB22	EGM-224	GEM-2022	2TM-P22
C14	.047	200V	P288N-047	DD-503	CUBZB47	EGP-473	GEM-4147	2TM-S47
C15	10	NPO 5%	NPO-DI 10	DTZ-10	C10Q2C	CCTO-100	CNO-410	10TCC-Q10
C16	.003	10%	DI-3000		P065D3	CCD-302	JL-223	10TS-D30
C17	220		DI-220	DD-221	L10T22	CCD-221	B-322	10TS-T22
C18	220		DI-220	DD-221	L10T22	CCD-221	B-322	10TS-T22
C19	.01		BPD-01	DD-103	BYAI03E	CCD-103	B-410	5HK-S10
C20	75	N750	N750-DI 75	DTZ-75	C10Q75U	CCTN-750	CNT-475	10TCU-Q75
C24	10	NPO 5%	NPO-DI 10	DTZ-10	C10Q2C	CCTO-100	CNO-410	10TCC-Q10
C25	.0015	10%	DI-1500	DD-152	P08DI5	CCD-152	GP215	10TS-D15
C26	.01		BPD-01	DD-103	BYAI03E	CCD-103	B-410	5HK-S10
C27	.01		BPD-01	DD-103	BYAI03E	CCD-103	B-410	5HK-S10
C28	.01		BPD-01	DD-103	BYAI03E	CCD-103	B-410	5HK-S10
C29	.047	200V	P288N-047	DD-503	CUBZB47	GDP-3-473	GEM-4147	2TM-S47
C30	470		DI-470	DD-471	BYAI07A7	CCD-471	B-347	10TS-T47
C31	.01		BPD-01	DD-103	BYAI03E	CCD-103	B-410	5HK-S10
C32	.0047	600V	P688N-0047	DD-472	CUBZB47	GEM-6472	GTM-6472	6TM-D47
C33	.0033	400V 10%	V84C4D33-10%		P06D33	6DP-1-332	GEM-16233	6TM-D33
C34	220		DI-220	DD-221	L10T22	CCD-221	B-322	10TS-T22
C35	.01	600V 10%	V84C6S1-10%		P06S1	6DP-2-103	GEM-1611	6TM-S10
C36	.0015	400V 10%	V84C4D15-10%		P08D15	6DP-1-152	GEM-16215	6TM-D15
C37	.0033	400V 10%	V84C4D33-10%		P08D33	6DP-1-332	GEM-16233	6TM-D33
C38	.047	600V	P688N-047	DD-503	CUBZB47	6DP-3-473	GEM-6147	6TM-S47
C39	.022	600V	P688N-022	DD-203	CUBZB22	6DP-2-223	GEM-6122	6TM-S22
C40	.068	600V 10%	V84C6D68-10%		P06D68	6DP-2-683	GEM-16268	6TM-D68
C41	.033	600V	P688N-033	DD-303	CUBZB33	6DP-3-333	GEM-6133	6TM-S33
C42	120	NPO 5%		DTZ-120	C10T12C		CCD-312	10TCC-T12
C43	68	NPO 5%		DTZ-68	C10Q68C		CNO-468	10TCC-Q68
C44	.0022	400V 10%	V84C4D22-10%		P06D22	6DP-1-222	GEM-16222	6TM-D22
C45	.15	200V	P288N-15		CUBZP22	3DP-3-154	GTM-2015	2TM-P15
C46	.001	10%	DI-1000	DD-102	P06D1	CCD-102	GP210	10TS-D10
C47	.004	10%	1464-0004		1N35A	VCM-25-332X	MCE463	MS-3-4
C48	22	NPO 10%	NPO-DI 22	DTZ-22	C10Q23C	CCTO-220	CNO-422	10TCC-Q22
C49	470	5%	469-00047		5RS747	CM-19B-647J	MCJ244	MS-347
C50	330	5%	469-00033		5RS733	CM-19B-333J	MCE241	MS-333
C51	.022	600V	P688N-022	DD-203	CUBZB33	6DP-2-223	GEM-6122	6TM-S22
C52	.1	600V	P688N-1	DP-104	CUBZP1	6DP-4-104	GEM-601	6TM-P10
C53	.033	600V	P688N-033	DD-303	CUBZB33	6DP-3-333	GEM-6133	6TM-S33
C54	130	5000V NPO 5%	2361B					
C55	100			DD60-101	HVB50T1			50TCY-T10
C56	100			DD60-101	HVB50T1			50TCY-T10
C57	100			DD60-101	HVB50T1			50TCY-T10
C58	.068	1000V	P108N-068		CUBU6S8	16DP-3-702	GEM-10168	10TM-S68
C59	.001		BPD-001	DD-102	BYAI01D	CCD-102	B-210	5HK-D10
C60	.22	200V	P288N-22		CUBZP22	3DP-4-224	GEM-2022	2TM-P22
C61	.01		BPD-01	DD-103	BYAI03E	CCD-103	B-410	5HK-S10
C62	.001		BPD-001	DD-102	BYAI01D	CCD-102	B-210	5HK-D10
C63	.001		BPD-001	DD-102	BYAI01D	CCD-102	B-210	5HK-D10
C64	.001		BPD-001	DD-102	BYAI01D	CCD-102	B-210	5HK-D10
C65	.001		BPD-001	DD-102	BYAI01D	CCD-102	B-210	5HK-D10
C66	.001		BPD-001	DD-102	BYAI01D	CCD-102	B-210	5HK-D10
C67	.001		BPD-001	DD-102	BYAI01D	CCD-102	B-210	5HK-D10
C68	.1	600V	P688N-1	DP-104	CUBZP1	6DP-4-104	GEM-601	6TM-P10
C69	.047	600V	P688N-047	DD-503	CUBZB47	6DP-3-473	GEM-6147	6TM-S47
C70	100		DI-100	DD-101	L10T1	CCD-101	GP310	10TS-T10
C71	.001		BPD-001	DD-102	BYAI01D	CCD-102	B-210	5HK-D10

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA: Packard-Bell PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	10000	½	25091	F1-S *				Contrast
	8000 Tap							
B	500K	½		R2-41				Volume
C	Switch			KS-1				Power Off-On
R2A	500K	½	25092	F1-40				Vert. Hold
B	50K			R2-29			■ UE4334	Brightness
R3	3meg		25867	BX-64	B47-3meg-S	HLC-3	SU-59	Vert. Linearity
R4	3meg		25867	BX-64	B47-3meg-S	HLC-3	SU-59	Height
R5	5meg		25901	TT-37	B47-5meg-S	HLC-5	PTA6L	Focus

* Use Tap #6. ■ "STA-LOC" Equivalent: FB56L, RU54L, C0657, HB125.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA: IRC PART No.	WORKMAN TV PART No.	REMARKS
R6	22K			
R7	22K			
R8	1000Ω			
R9	68Ω			
R10	12K			
R11	3.9meg			
R12	1meg			
R13	1000Ω			
R14	68Ω			
R15	6800Ω			
R16	1000Ω			
R17	270Ω			
R18	3300Ω			
R19	1.5meg			
R20	470K			
R21	8200Ω 2W			
R22	68K			
R23	150Ω			
R24	220K			
R25	39K			
R26	1.5meg			Note 1
R27	47K			
R28	3300Ω			
R29	120Ω			
R30	470K			
R31	220K			
R32	6800Ω			
R33	820Ω			
R34	3000Ω			
R35	560Ω 2W			
R36	22K			
R37	470K			
R38	2.2meg			
R39	100K			
R40	18K			
R41	33K			

ITEM No.	RATING	REPLACEMENT DATA: IRC PART No.	WORKMAN TV PART No.	REMARKS
R42	47K			
R43	4.7meg			
R44	150K			
R45	1.2meg			
R46	22K			
R47	1.5meg 1W			
R48	1.8meg			
R49	470K			
R50	470K			
R51	22K			
R52	23K			
R53	82K			
R54	2200Ω 2W			
R55	220Ω			
R56	220Ω			
R57	1meg			
R58	1meg			
R59	330K			
R60	47K			
R61	8200Ω			
R62	100K			
R63	1800Ω 5%			Note 2
R64	100K 5%			
R65	150K			
R66	27K 5%			
R67	100Ω			
R68	830K			
R69	15K 2W			
R70	4700Ω			
R71	100Ω 2W			
R72	25000Ω 10W	PW10-2500	10W-SQ-2500	
R73	560Ω 2W			
R74	7.5Ω 10W	FRT.5	F80	Note 3
R75	34Ω 10W	PW10-34	10W-SQ-34	
R76	2.2Ω 1W			
R77	1meg			

Note 1. Later production chassis use 47K 1 watt.
Note 2. 1800Ω used in later production chassis (stamped 2962 or higher). Early versions use 2200Ω.
Note 3. Fusible Type.

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA: Packard-Bell PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	Workman TV PART No.	NOTES
L1	1st Video IF	29755 ①	TV-131	6225	RTC-8556	T28	① Part #29584A used in some versions.
L2	2nd Video IF	29585	TV-130	6219	RTC-8551	T27	② Wound on 39K Resistor.
L3	3rd Video IF	29585	TV-130	6219	RTC-8551	T27	③ Wound on 2900Ω Resistor.
L4	4th Video IF	29697	TV-130	6219	RTC-8551	T27	
L5	RF Choke (10uh)	29566	BC-566	4613	RTC-8523	T960	▲ Parallel with 3900Ω Resistor.
L6	Peaking (180uh)	29508 ②	TV-183	6179	RTC-8596	T309	
L7	Peaking (93uh)	29582 ③	TV-181 ▲	6177 ▲	RTC-8594 ▲	T304 ▲	
L8	4.5MC Trap	29548A	TV-151	1470	RTC-8603	T250	
L9	Peaking (600uh)	29713	TV-305	6146	RTC-8582	T326	
L10	1st Sound IF	29714C	TV-151	1469	RTC-8602	T249	
L11	2nd Sound IF	29080D	TV-113	1463-1FT	RTC-8606	T283	
L12	Quadrature	29091B	TV-124	1480	RTC-8605	T251	
L13	RF Choke (12uh)	29646	BC-566	4612	RTC-8523	T961	

COILS (SWEEP CIRCUITS)

ITEM No.	USE	REPLACEMENT DATA: Packard-Bell PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	Workman TV PART No.	NOTES
L14	Horiz. Stabilizer (Hold)	29070A	TV-163	6211	RTC-8623	HS-7	WLC-35	T103	

TRANSFORMERS (SWEEP CIRCUITS)

ITEM No.	USE	REPLACEMENT DATA: Packard-Bell PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T1	Vert. Output	29480B		VO-101	26S84	A-113X	
T2	Yoke (Horiz. 17.6MH ① (1M² (Vert. 15MH)	29645C	MDF-112	DY-27A ①	Y-48 ①	Y-80-1	
	Rear Cover † and Centering Device					YC-110	
T3	Horiz. Output	29518					
	Aft. Horiz. Output	29534					

① Use original yoke damping network, if necessary. † Yoke Cover Part #34103.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA: Packard-Bell PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T4	6700Ω	3-4Ω	89500C	A-2930	A-3877	24S51	S-49X	

SPEAKER

ITEM No.	TYPE SIZE	TYPE FIELD	TYPE V. C. IMP.	REPLACEMENT DATA: Packard-Bell PART No.	QUAM PART No.	NOTES
SP1	3½"	PM	3-4Ω	83127C	3A07	

POWER RECTIFIERS

ITEM No.	RATING CURRENT (Measured)	REPLACEMENT DATA: Packard-Bell PART No.	RCA PART No.	SARKES TARZIAN PART No.	SYLVANIA PART No.	NOTES
M1	.260A	72041	1N1763	40H	SR500	
M2	.260A	72041	1N1763	40H	SR500	

SIGNAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA: Packard-Bell PART No.	GENERAL ELECTRIC PART No.	RAYTHEON PART No.	SYLVANIA PART No.	NOTES
M3	*	72053	6GC1 *			*Dual Selenium, Common Cathode Type

MISCELLANEOUS

ITEM No.	PART NAME	Packard-Bell PART No.	NOTES
M4	Tuner	10670B	VHF
	Tuner	10680A	UHF
	Adapter	10681	UHF Provisions
	Antenna	10622A *	JFD REPLACEMENT #TA-376, Model 19VT1
	Antenna	10623A * or 10623EA †	JFD REPLACEMENT #TA-376, Model 17VI1.

* Brass † Chrome

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

DESCRIPTION	PART NO.	MODEL NO. 17VI1	17LV1	19VT1	23VL1
Safety Glass	55089	X			
Safety Glass	55143		X		
Safety Glass	55090A			X	
Mask	55108B †	X			
Mask	55131 ††	X			
Mask	55153A		X		
Mask	55162			X	
Knob-VHF Channel Selector	52333C	X	X	X	
Knob- "	52349D ††	X			
Knob-UHF Channel Selector	52360A	X	X	X	
Knob- "	52363A ††	X			
Knob-Fine Tuning-VHF	52329	X	X	X	
Knob- "	52358 ††	X			
Knob-UHF Fine Tuning	52361	X	X	X	

DESCRIPTION	PART NO.	MODEL NO. 17LV1	17VT1	19VT1	23VL1
Knob-UHF Fine Tuning	52364 ††	X			
Knob-Contrast	52346-1A	X	X	X	
Knob- "	52342-1A ††	X			
Knob-Vertical Hold	52346-2A	X	X	X	
Knob- "	52342-2A ††	X			
Knob-Volume	52347-1A	X	X	X	
Knob- "	52343-1A ††	X			
Knob-Brightness	52347-2A	X	X	X	
Knob- "	52343-2A ††	X			
Knob-Disc	52344A	X	X	X	
Knob- "	52350A ††	X			

† Brown, Tan Models

†† Black, Aqua Models

WIRING DATA

High Voltage Lead	Use BELDEN No. 8869
Shielded Hook-up Wire	Use BELDEN No. 8885 (Single Conductor) 8738 (Two Conductor)
General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8534 (Stranded) Available in Ten Colors
Power Cord (Interlock Type)	Use BELDEN No. 8874
300Ω Tuner Input Lead	Use BELDEN No. 8225
300Ω Antenna Lead-In	Use BELDEN No. 8230 or 8275
Antenna Rotor Cable	Use BELDEN No. 8464 (Flat) or 8484 (Round) - 4 Conductor 8485 (Round) - 5 Conductor 8486 (Round) - 8 Conductor

VHF TUNER ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS

USE AN ISOLATION TRANSFORMER TO PROTECT THE TEST EQUIPMENT.
The High Voltage lead should be securely taped and kept away from the chassis.
Allow a 20 minute warm-up period for the receiver and test equipment.
Suggested Alignment Tools: GENERAL CEMENT #5009, 8195, 8274, 8275, 8728, 8729, 8987, 8988, 8989
WALSCO #2515, 2531, 2532

VHF OSCILLATOR ALIGNMENT

Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Use only enough sweep generator output to provide a usable pattern on scope.
Use 10MC sweep unless otherwise noted.
Connect variable bias to IF AGC line. Adjust bias to obtain response curve which shows no indication of overloading.

	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	Across antenna terminals with 120Ω resistor in each lead.	213MC	211.25MC 215.75MC	13	Vert. Amp. thru 47K across Video Det. Load.	A201	Adjust to place sound marker in trap notch as in Fig. 201. Video marker should fall at 50%.
		207MC	205.25MC 209.75MC	12		A202	
		201MC	199.25MC 203.75MC	11		A203	
		195MC	193.25MC 197.75MC	10		A204	
		189MC	187.25MC 191.75MC	9		A205	
		183MC	181.25MC 185.75MC	8		A206	
		177MC	175.25MC 179.75MC	7		A207	
		85MC	83.25MC 87.75MC	6		A208	
		79MC	77.25MC 81.75MC	5		A209	
		69MC	67.25MC 71.75MC	4		A210	
		63MC	61.25MC 65.75MC	3		A211	
		57MC	55.25MC 59.75MC	2		A212	

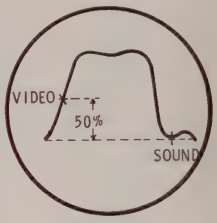
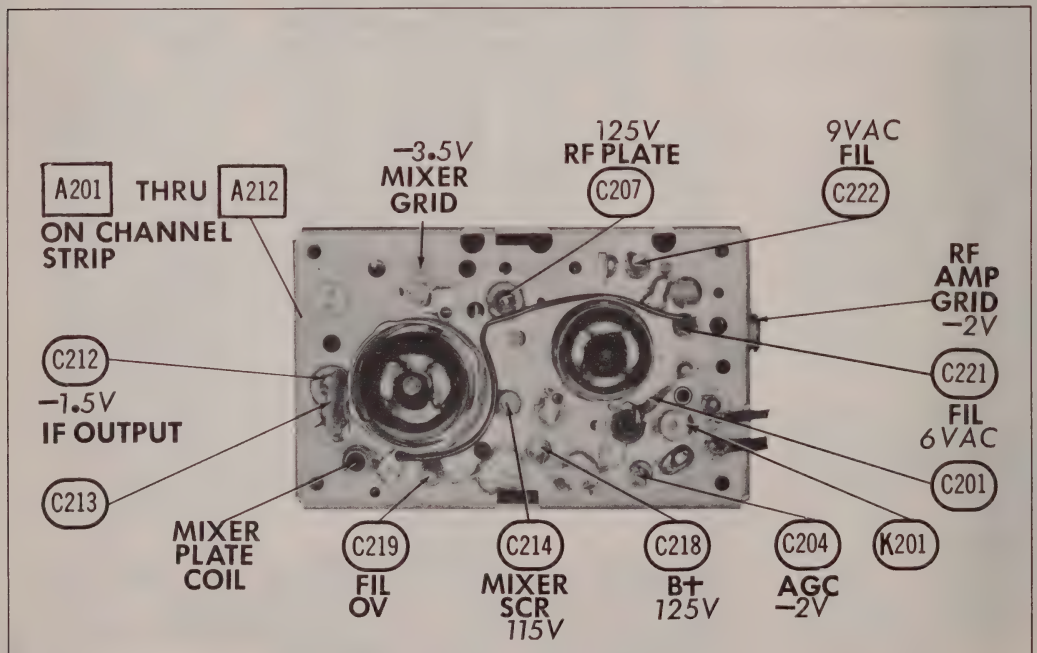


FIG. 201

VHF RF AND MIXER ALIGNMENT

This portion of the tuner has been properly aligned at the factory and is very stable. Alignment of this portion should not be attempted in the field.



VHF TUNER 10670B — TOP VIEW

VHF TUNER PARTS LIST AND DESCRIPTIONS

TUBES

• GENERAL ELECTRIC • RAYTHEON • SYLVANIA •					
ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V201	RF Amp.	3CY5	V202	Mixer-Osc.	6CG8

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C201	10		NPO-DI 10	DTZ-10	C10Q1C	CCTO-100	CNO-410	10TCC-Q10
C202	6.8 10%		NPO-SI 6.8	TCZ-6R8	C10V68C	CCTO-6R8	CNO-568	10TCC-V68
C203	10		NPO-DI 10	DTZ-10	C10Q1C	CCTO-100	CNO-410	10TCC-Q10
C204	1000		EF-001	MFT-1000		CCF-102	CT280A	
C205	.33							
C206								
C207	100		EF-0001	MFT-100				
C208	1000		BPD-001	DD-102	BYA10D1	CCD-102	GP210	10TS-D10
C209								
C210	10		NPO-DI 10	DTZ-10	C10Q1C	CCTO-100	CNO-410	10TCC-Q10
C211	1000		BPD-001	DD-102	BYA10D1	CCD-102	GP210	10TS-D10
C212	1.5							
C213	56 NPO 10%		NPO-DI 56	DTZ-56	C10Q56C	CCTO-560	CNO-456	10TCC-Q56
C214	1000		EF-001	MFT-1000		CCF-102	CT280A	
C215	1000		BPD-001	DD-102	BYA10D1	CCD-102	GP210	10TS-D10
C216	10		NPO-DI 10	DTZ-10	C10Q1C	CCTO-100	CNO-410	10TCC-Q10
C217	10		NPO-DI 10	DTZ-10	C10Q1C	CCTO-100	CNO-410	10TCC-Q10
C218	1000		EF-001	MFT-1000		CCF-102	CT280A	
C219	1000		EF-001	MFT-1000		CCF-102	CT280A	
C220	1000		BPD-001	DD-102	BYA10D1	CCD-102	GP210	10TS-D10
C221	1000		EF-001	MFT-1000		CCF-102	CT280A	
C222	1000		EF-001	MFT-1000		CCF-102	CT280A	

RESISTORS

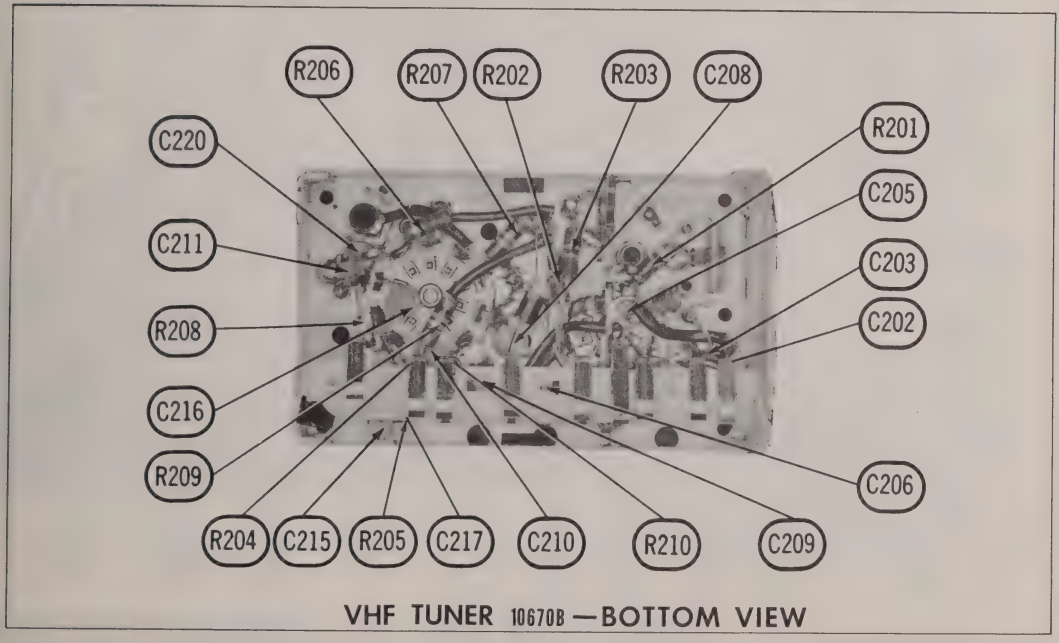
All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN TV PART No.	REMARKS
R201	15K			
R202	10K			
R203	22K			
R204	22K			
R205	1meg			

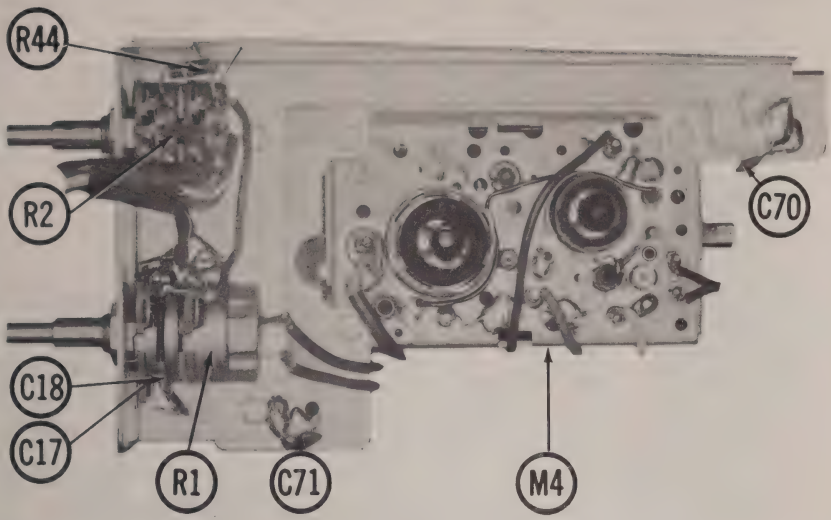
ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN TV PART No.	REMARKS
R206	2200Ω			
R207	10K			
R208	15K			
R209	10K			
R210	8200Ω			

COMPONENT COMBINATIONS

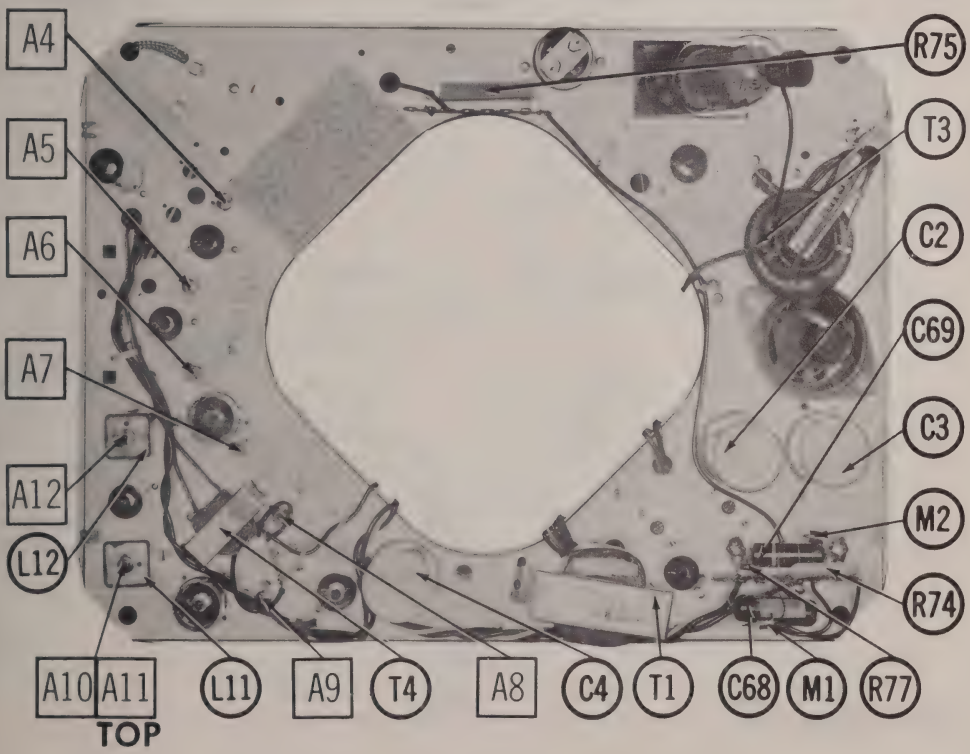
ITEM No.	USE	DESCRIPTION	Packard-Bell PART No.	REPLACEMENT DATA
K201	Antenna Isolation			



VHF TUNER 10670B—BOTTOM VIEW



VHF TUNER, CONTROL PANEL



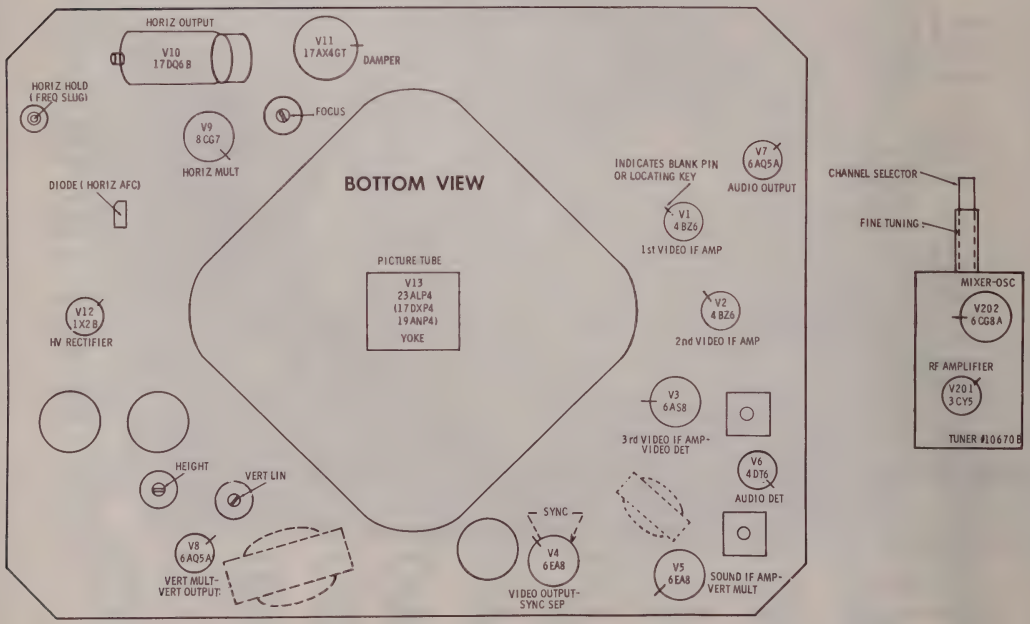
CHASSIS - TOP VIEW

RESISTANCE MEASUREMENTS

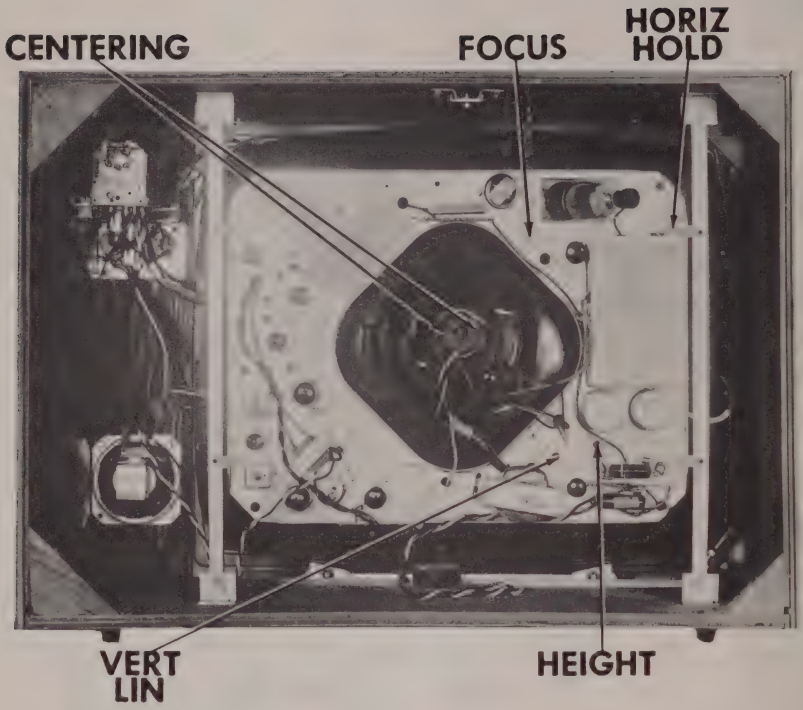
ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	4BZ6	1.5meg	68Ω	12Ω	15Ω	†3500Ω	†3500Ω	0Ω		
V2	4BZ6	1.8meg	68Ω	15Ω	18Ω	†3500Ω	†3500Ω	0Ω		
V3	6AS8	†3500Ω	.1Ω	270Ω	18Ω	23Ω	3300Ω	0Ω	.1Ω	†3500Ω
V4	6EA8	†50K	470K	†2500Ω	30Ω	35Ω	†8700Ω	• 200Ω	0Ω	2.2meg
V5	6EA8	• †3meg	1.3Ω	†5800Ω	25Ω	30Ω	†5800Ω	120Ω	0Ω	•2.5meg
V6	4DT6	3.8Ω	820Ω	25Ω	23Ω	†470K	†9300Ω	220K		
V7	6AQ5A	• 1000Ω	560Ω	12Ω	7Ω	†420Ω	†1100Ω	NC		
V8	6AQ5A	• 2meg	0Ω	40Ω	45Ω	†510Ω	560Ω	NC		
V9	8CG7	†8800Ω	2meg	1800Ω	45Ω	53Ω	†150K	100K	1800Ω	0Ω
V10	17DQ6B	NC	53Ω	TP	†15K	820K	TP	70Ω	0Ω	TOP CAP †12Ω
V11	17AX4GT	NC	TP	6meg	NC	†100Ω	NC	70Ω	90Ω	
V12	1X2B	PINS 1 THRU 8 HAVE INFINITE RESISTANCE								TOP CAP †330Ω
V13	23ALP4	40Ω	39K	†1.5meg	•†1.5meg	NC	NC	• 230K	35Ω	
V201	3CY5	1.3meg	0Ω	5Ω	.7Ω	†2500Ω	†12K	0Ω		
V202	6CG8A	15K	†12K	0Ω	5Ω	0Ω	†4700Ω	†12K	0Ω	1meg
ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9

• THIS READING WILL VARY. CONTROL SET FOR NORMAL OPERATION.
† MEASURED FROM OUTPUT OF M1.
† MEASURED FROM PIN 3 OF V11.

NC NO CONNECTION
TP TIE POINT



TUBE PLACEMENT CHART



CABINET—REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station, preferably with a test pattern.

Set the Brightness and Contrast for a normal picture.

Turn the Horizontal Hold (Freq. Slug) clockwise until the picture loses sync. It may be necessary to switch off channel and back again for picture to lose sync.

Turn the Horizontal Hold slowly counterclockwise until the picture just falls into sync.

DISASSEMBLY INSTRUCTIONS

CHASSIS REMOVAL

1. Disconnect antenna leads.
2. Remove 8 wood screws holding rear cover.
3. Remove rear cover.
4. Disconnect picture tube socket, yoke, high voltage lead, and speaker leads.
5. Remove 6 knobs at front of set.
6. Remove 2 nuts holding tuner and control bracket.
7. Remove 2 screws holding AC plug.
8. Remove 4 screws holding chassis.
9. Remove chassis.

PICTURE TUBE REMOVAL

It is necessary to remove the chassis for picture tube removal.

PHOTOFACT® Folder

**PRODUCTION CHANGE
BULLETIN 266**

SUPPLEMENTAL DATA TO PHOTOFACT FOLDER 2 IN SET 527

RCA Victor Models 211B312, SU, U, 211B325, SU, U, 211B326, SU, U, 211B327, U, 211D40C4, 211D405, 211D406, SU, U, 211D407, 211D409, 211D485, 211D486, 211D487, 211D505, SU, U, 211D506, SU, U, 211D507, SU, U (Ch. KCS131C, D, E, T, U, W, ZD, ZE, ZF) were covered in PHOTOFACT Folder 2 - Set 527.

Models 231B602, U, 231B605, U, 231B606, U, 231B607, U, 231D545, U, 231D546, U, 231D547, U (Ch. KCS131ZJ, ZK, ZT, ZU) are electrically similar except for the following changes.

COMPONENT CHANGES

R62 is increased from 2700Ω to 10K.

R63 is decreased from470K to 330K.

R71 is increased from 27K to 33K.

C50 is decreased from .0022 to .0015.

R75 is decreased from 2.7meg to 2.2meg.

C51 is increased from .0068 to .0082.

R67 is decreased from 27K to 18K.

R68 is increased from 18K to 27K.

R65 is disconnected from the junction of C48 and R66. C49 and R75 are also disconnected from the junction of C48 and R66. A .047mfd capacitor is then added from R65 to the junction of C49 and R75.

C66 is decreased from .047 to .027.

C68 is decreased from .039 to .027.

R96 is increased from 1.8Ω to 3Ω.

C69 is increased from 47mmf to 100mmf.

C70 is increased from 56mmf to 180mmf.

C71 is decreased from 330mmf to 220mmf.

C67 and R89 are deleted. Boost comes directly off of lug 1 of T4 (Horizontal Output Transformer).

C73 is deleted.

A 5.6meg resistor is added from pin 7 of V5 (6DT6) to pin 8 of V4 (6EB8) (Chassis KCS131ZJ, ZK).

A 6.8meg resistor is added from pin 7 of V5 (6DT6) to pin 8 of V4 (6EB8) (Chassis KCS131ZJ, ZK).

A Chemical Fuse (Part #109588) is inserted between pin 8 of V15 (5U4GB) and L21 (Filter Choke).

L6 is changed to Part #109758.

R5 (Vertical Hold Control) is changed to Part #109780 (Chassis KCS131ZT, ZU).

R4 (Brightness Control) is changed to Part #109779 (Chassis KCS131ZT, ZU).

RCA VICTOR MODELS 231B602, U, 231B605, U, 231B606, U, 231B607, U, 231D545, U, 231D546, U, 231D547, U (CH. KCS131ZJ, ZK, ZT, ZU)

PRODUCTION CHANGE
BULLETIN 266

PRODUCTION CHANGE
BULLETIN 266

(Continued On The Reverse Side)

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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R6 (Tone Control) is changed to Part #109781 (Chassis KCS131ZT, ZU).

T2 (Vertical Output Transformer) is changed to Part #109783.

T3 (Deflection Yoke) is changed to Part #109771.

T4 (Horizontal Output Transformer) is changed to Part #109785.

TUBE CHANGES

V14 (High Voltage Rectifier) is changed to a Type 3A3.

V16 (Picture Tube) is changed to a Type 23AWP4.

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Safety Glass	106275	
Mask	109770	
Knob	109192	VHF Channel Selector, Models 231D545, U, 546, U, 547, U
Knob	109398	VHF Channel Selector, Models 231B602, U
Knob	107791	VHF Channel Selector, Models 231B605, U, 606, U, 607, U
Knob	107269	UHF Channel Selector, Models 231B602, U, 605, U, 606, U, 607, U, 231D545, U, 546, U, 547, U
Knob	107266	UHF Dial, Models 231B602, U, 605, U, 606, U, 607, U, 231D545, U, 546, U, 547, U
Knob	107263	Fine Tuning
Knob	107264	Volume, Contrast
Knob	107265	Auxiliary
Cabinet	Z4826	Autumn Mahogany, Models 231B605, U
Cabinet	Z4825	Black, Models 231B602, U
Cabinet	M4829	Mahogany, Models 231D545, U
Cabinet	M4831	Oak, Models 231D547, U
Cabinet	Z4827	Ribbon Walnut, Models 231B606, U
Cabinet	Z4828	Toast Oak, Models 231B607, U
Cabinet	M4830	Walnut, Models 231D546, U
Cabinet Leg (Front)	X5126	Oak, Models 231D547, U
Cabinet Leg (Rear)	X5194	Oak, Models 231D547, U
Cabinet Leg (Front)	X5125	Walnut, Models 231D546, U
Cabinet Leg (Rear)	X5193	Walnut, Models 231D546, U
Cabinet Leg	X5241	Mahogany, Models 231D545, U

SUPPLEMENTAL DATA TO PHOTOFACT FOLDER 4 IN SET 528

AIRLINE MODELS GAA-2840A, GAA-2841A, GAA-2842A

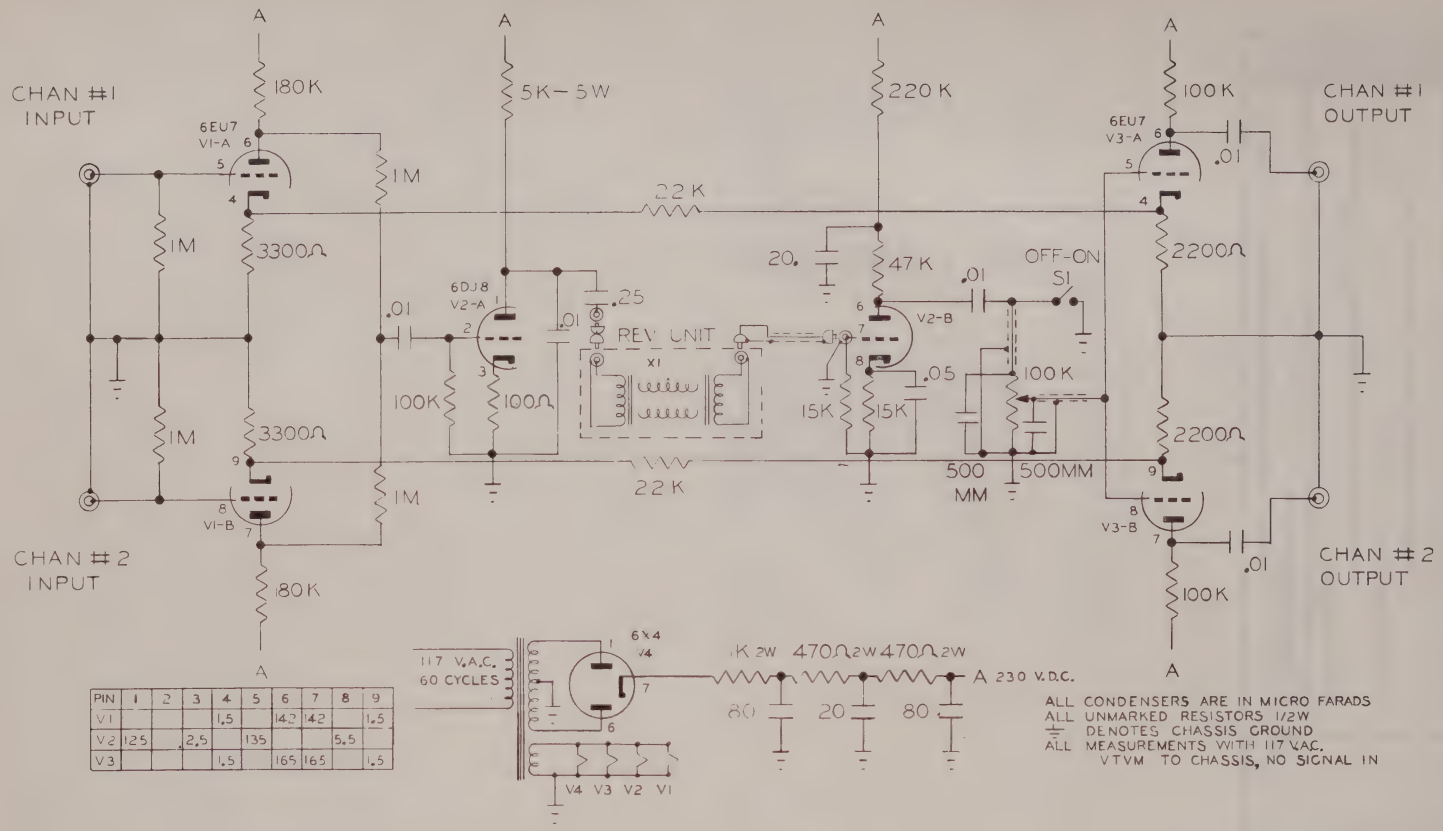
Airline Models GAA-2800A, GAA-2801A, GAA-2802A were covered in PHOTOFACT Folder 4 - Set 528.

Models GAA-2840A, GAA-2841A, GAA-2842A are electrically similar except for the following changes.

REVERBERATION UNIT ADDED

A Schematic Diagram showing the reverberation unit is given in this bulletin.

(Continued On The Reverse Side)



PIN	1	2	3	4	5	6	7	8	9
V1				1.5		142	142		1.5
V2	125		2.5		135			5.5	
V3				1.5		165	165		1.5

ALL CONDENSERS ARE IN MICRO FARADS
ALL UNMARKED RESISTORS 1/2W
⏚ DENOTES CHASSIS GROUND
ALL MEASUREMENTS WITH 117 V.AC. VTVM TO CHASSIS, NO SIGNAL IN

Schematic Diagram Courtesy of Montgomery Ward & Company

PHOTOFACT® Folder

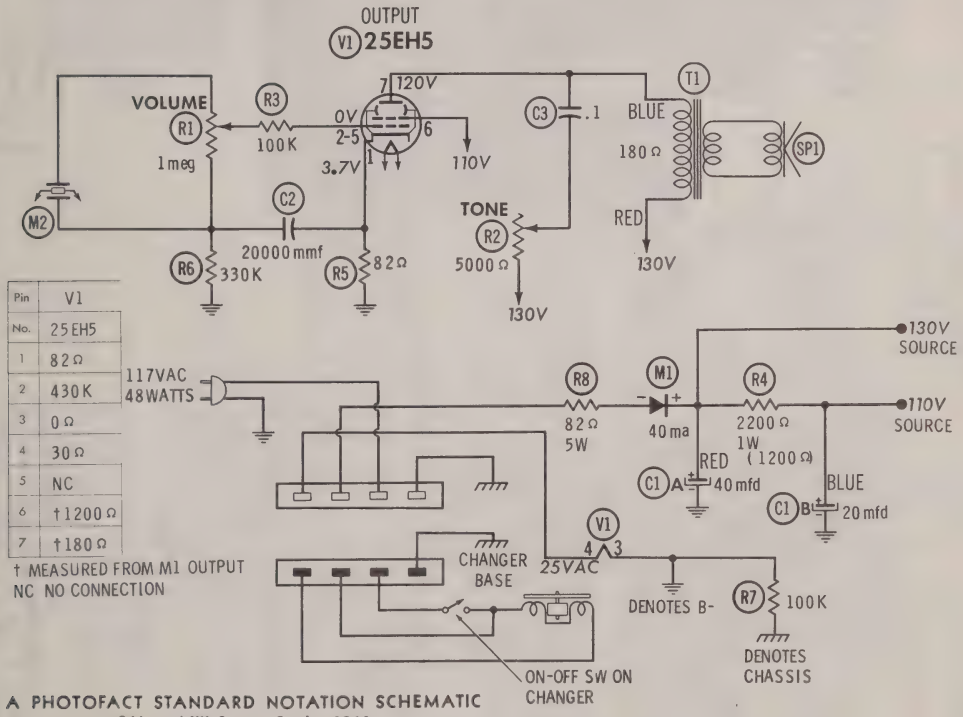
ARVIN MODELS 80P23, 80P25, 80P28 (Ch. 1.60801)

ARVIN MODELS 80P23, 80P25, 80P28 (Ch. 1.60801)

MODEL 80P23

TRADE NAME	Arvin Models 80P23, 80P25, 80P28 (Ch. 1.60801)
MANUFACTURER	Arvin Industries, Inc., Columbus, Indiana
TYPE SET	AC Operated One Tube Phono Amplifier With 4 Speed Automatic Record Changer
POWER SUPPLY	110 – 120 Volts AC, 60 Cycles RATING 48 Watts, .46 Amp. @117 Volts AC

FOR SERVICE INFORMATION ON RECORD CHANGER – SEE SIMILAR V-M 1200A – PHOTOFACT SET 353 FOLDER 16 OR RECORD CHANGER MANUAL RC-10



Pin No.	V1 25EH5
1	82Ω
2	430K
3	0Ω
4	30Ω
5	NC
6	†1200Ω
7	†180Ω

† MEASURED FROM M1 OUTPUT
NC NO CONNECTION

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	TYPE (◆ GENERAL ELECTRIC ◆ RAYTHEON ◆ SYLVANIA ◆)	ITEM No.	USE	TYPE
V1	Output	25EH5			

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA ARVIN PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	40	150	45952-5	PRS2180	BBRD4215	TCD485	TDLD-5	TVA-2438	
B	20	150							

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C2	20000		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C3	.1 200V		P288N-1	DF-104	CUB2P1	2DP-3-104	GEM-201	2TM-P10

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA ARVIN PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	1meg	½	47500-12	B-70	A47-1meg-Z	Q13-137	U53	Volume
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
R2A	5000Ω	½	47500-21	B-11	A47-5000-S	Q13-114	U12	Tone
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA IRC PART No.	WORKMAN TV PART No.	REMARKS
R3	100K			
R4	2200Ω 1W			(1200Ω) *
R5	82Ω			
R6	330K			
R7	100K			
R8	82Ω 5W	PW5-82	5W-SQ-82	

* Alternate Value.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA ARVIN PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T1	2500Ω	3-4Ω	46700-5	A-3025	A-3332	24S53	S-12X	

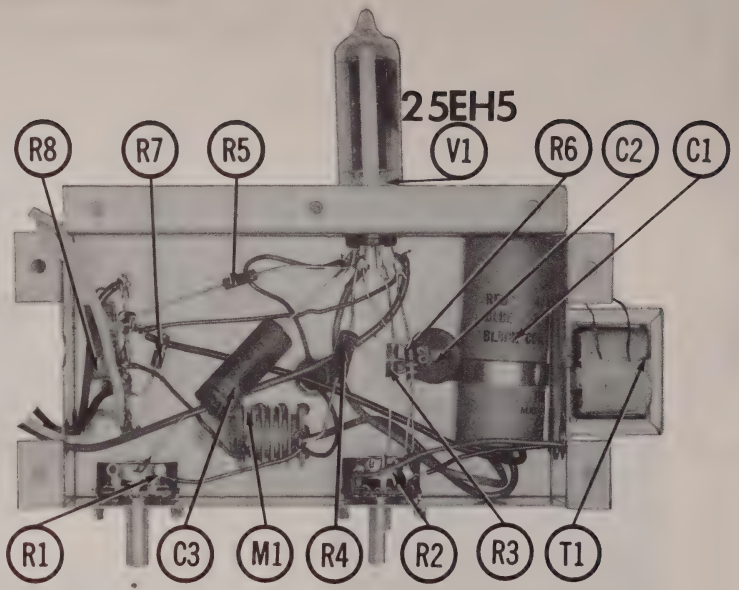
SPEAKER

ITEM No.	TYPE SIZE	TYPE FIELD	TYPE V. C. IMP.	REPLACEMENT DATA ARVIN PART No.	QUAM PART No.	NOTES
SP1	4"	PM	3-4Ω	45600-4	4A1R	

POWER RECTIFIERS

ITEM No.	RATING CURRENT (Measured)	REPLACEMENT DATA ARVIN PART No.	RCA PART No.	SARKES TARZIAN PART No.	SYLVANIA PART No.	NOTES
M1	.040A	46140-3 *	1N1763 ◆	65 *	SR200 ◆	* Silicon ◆ Selenium

CHASSIS—BOTTOM VIEW



PHONO CARTRIDGE & NEEDLES

*NEEDLE LISTINGS SHOWN ARE FOR RESPECTIVE REPLACEMENT CARTRIDGES ONLY.

ITEM No.	ARVIN PART No. CARTRIDGE	ARVIN PART No. NEEDLE*	ASTATIC PART No. CARTRIDGE	ASTATIC PART No. NEEDLE*	ELECTRO-VOICE PART No. CARTRIDGE	ELECTRO-VOICE PART No. NEEDLE*	SONOTONE PART No. CARTRIDGE	SONOTONE PART No. NEEDLE*	NOTES
M2	46507-7	Not Req.	120-TS	Not Req.	46-T	Not Req.	12TH-S	Not Req.	

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	47580	Volume
Knob	47579	Tone
Cabinet	48807-3	Red
Cabinet	48807-5	Blue
Cabinet	48807-8	Buff

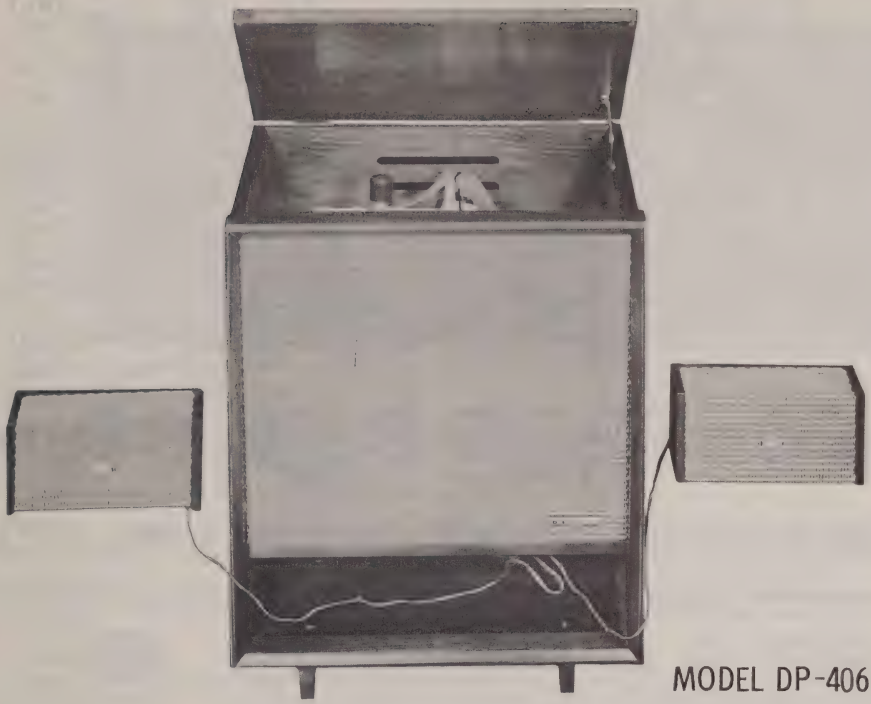
WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No.	8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord	Use BELDEN No.	1765-B (6 Ft. Length) 1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting)	Use BELDEN No.	8401
Phono Pick-up Arm Cable	Use BELDEN No.	8430 (Two Conductor - Twisted)

PHOTOFACT® Folder

DECCA MODELS DP-406, DP-407, DP-408

DECCA MODELS DP-406, DP-407, DP-408



MODEL DP-406

DECCA MODELS DP-406, DP-407, DP-408

TRADE NAME	Decca Models DP-406, DP-407, DP-408		
MANUFACTURER	Decca Distributing Corp., 445 Park Ave., New York 22, N. Y.		
TYPE SET	AC Operated 8 Tube FM-AM Receiver With Stereo Amplifier and 4 Speed Automatic Record Changer		
POWER SUPPLY	110 – 120 Volts AC, 60 Cycles	RATING	66 Watts, .68 Amp. @117 Volts AC (Less Motor)
TUNING RANGE–BROADCAST	540 – 1600KC	FREQ. MOD.	88 – 108MC

FOR SERVICE INFORMATION ON RECORD CHANGER – SEE SIMILAR V-M 1201 – PHOTOFACT SET 436 FOLDER 18
OR RECORD CHANGER MANUAL RC-12

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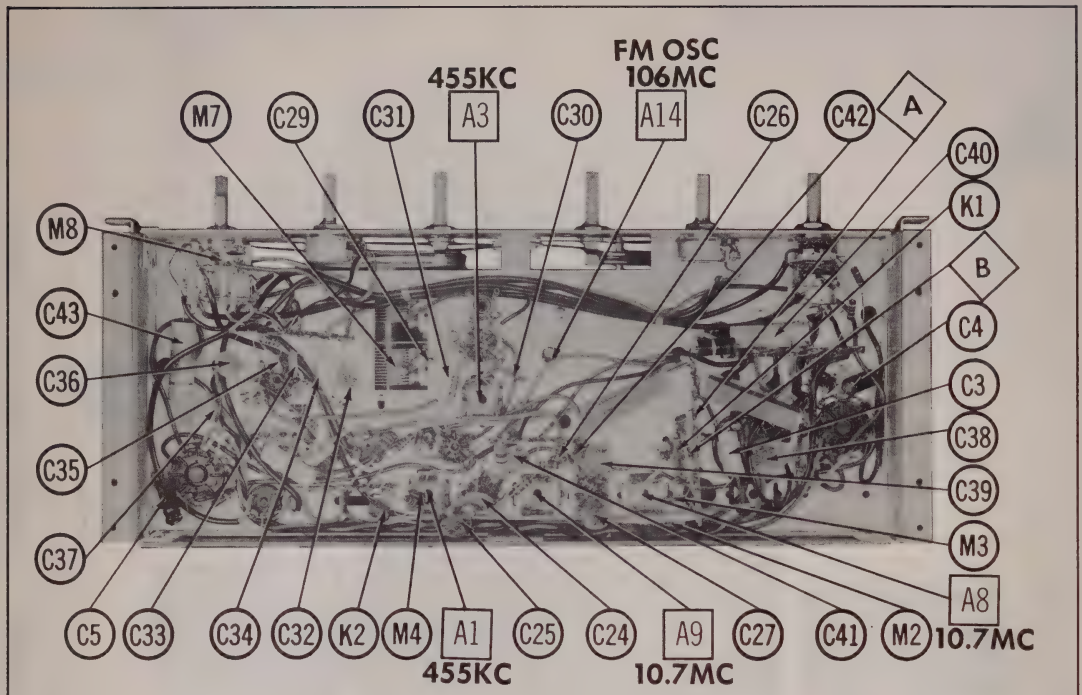
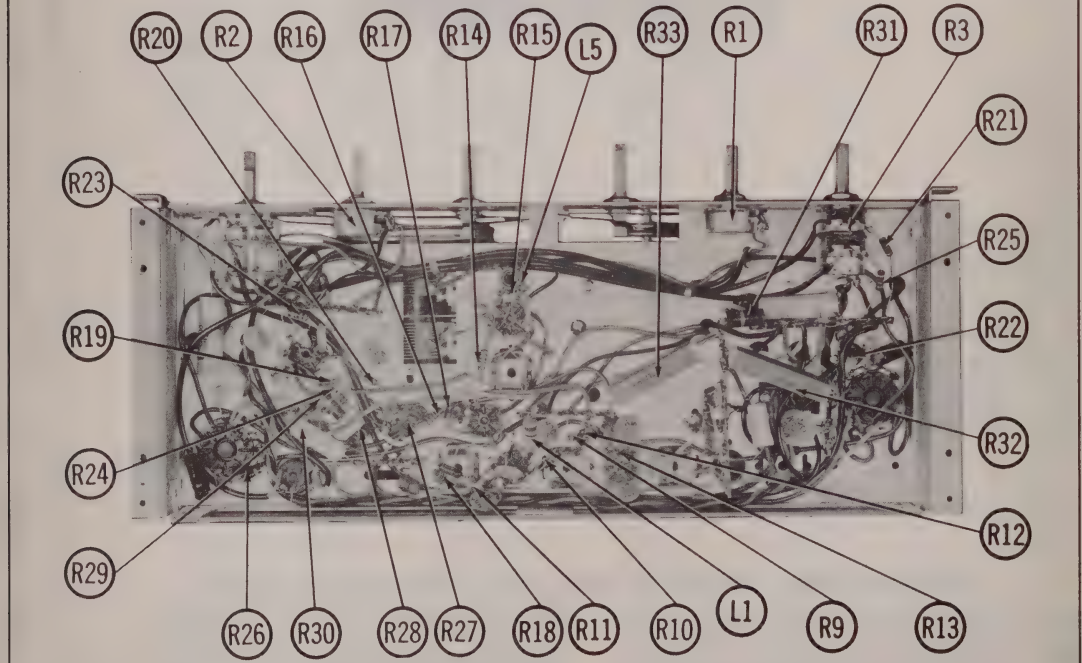
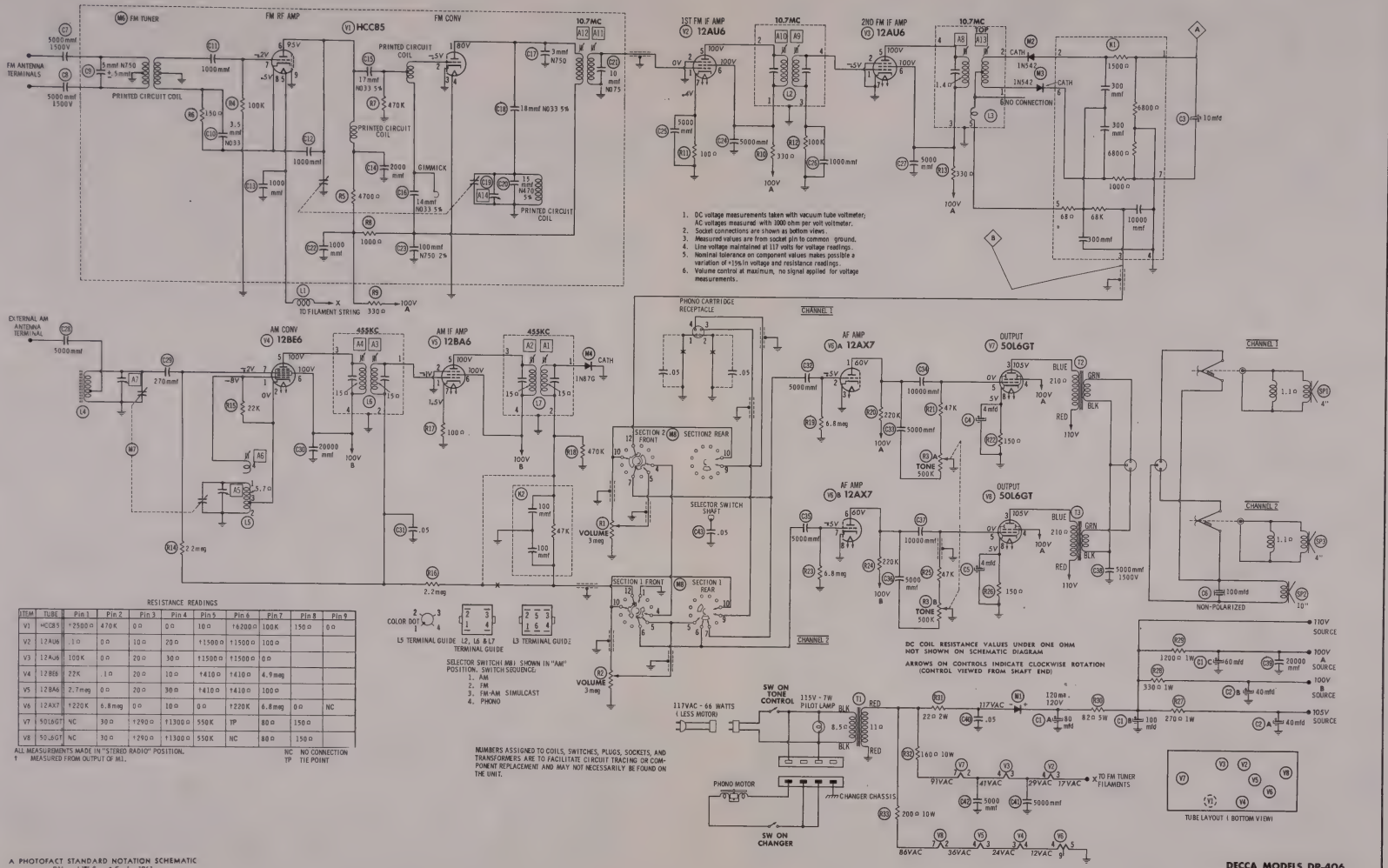
KN605



CHASSIS BOTTOM VIEW-ALIGNMENT, CAPACITOR & MISC. IDENT.



CHASSIS BOTTOM VIEW - RESISTOR & INDUCTOR IDENT.



1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured with 1000 ohm per volt voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	HCC85	†2500Ω	470K	0Ω	0Ω	10Ω	†6200Ω	100K	150Ω	0Ω
V2	12AU6	.1Ω	0Ω	10Ω	20Ω	†1500Ω	†1500Ω	100Ω		
V3	12AU6	100K	0Ω	20Ω	30Ω	†1500Ω	†1500Ω	0Ω		
V4	12BE6	22K	.1Ω	20Ω	10Ω	†410Ω	†410Ω	4.9meg		
V5	12BA6	2.7meg	0Ω	20Ω	30Ω	†410Ω	†410Ω	100Ω		
V6	12AX7	†220K	6.8meg	0Ω	10Ω	0Ω	†220K	6.8meg	0Ω	NC
V7	50L6GT	NC	30Ω	†290Ω	†1300Ω	550K	TP	80Ω	150Ω	
V8	50L6GT	NC	30Ω	†290Ω	†1300Ω	550K	NC	80Ω	150Ω	

ALL MEASUREMENTS MADE IN "STEREO RADIO" POSITION.
† MEASURED FROM OUTPUT OF M1.
NC NO CONNECTION
TP TIE POINT

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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DECCA MODELS DP-406, DP-407, DP-408

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT	
Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.	
Suggested Alignment Tools:	A1 thru A4, A8, A9, A10, A13. GENERAL CEMENT #5097, 8727 WALSCO #2515
	A5, A7, A14..... GENERAL CEMENT #5004, 5008, 5009 WALSCO #2520
	A11, A12..... GENERAL CEMENT #8282, 8606, 8606-L, 9091 WALSCO #2526, 2541, 2542, 2543, 2544
	A6..... GENERAL CEMENT #8282, 8606, 8606-L, 9295, 9440 WALSCO #2526, 2543, 2544, 2545

AM ALIGNMENT — SELECTOR IN AM POSITION

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	High side thru .1mfd to pin 7 (grid) of AM Converter. Low side to chassis.	455KC (400∿ 30% AM)	(AM) Tuning gang fully open.	Across voice coil.	A1, A2, A3, A4	Adjust for maximum output.
2.	"	1600KC	1600KC	"	A5	"
3.	"	600KC	600KC	"	A6	"
4.	Loop	1400KC	1400KC Signal.	"	A7	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output. Repeat Steps 2, 3 and 4.

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM—SELECTOR IN FM POSITION

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
5.	Across FM antenna terminals.	10.7MC (Unmod.)	(FM) Point of non-interference.	DC probe to point Ⓐ. Common to chassis.	A8, A9, A10, A11 A12	Adjust for maximum deflection.
6.	"	"	"	DC probe to point Ⓑ. Common to chassis.	A13	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE — SELECTOR IN FM POSITION

Use frequency modulated signal with 60∿ modulation and 450KC sweep. Use 120∿ sawtooth voltage in scope for horizontal deflection.

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
5.	Across FM antenna terminals.	10.7MC (450KC Swp)	(FM) Point of non-interference.	Vert. amp. to point Ⓐ. Low side to chassis.	A8, A9, A10, A11, A12	Disconnect stabilizing Capacitor C3. Adjust for maximum gain and symmetry of response similar to Fig. 1 with markers as shown. Reconnect C3.
6.	"	"	"	Vert. amp. to point Ⓑ. Low side to chassis.	A13	Adjust to place marker at the center of crossover lines similar to Fig. 2. SLIGHTLY retouch A8 for maximum amplitude and straightness of cross-over lines.

FM RF ALIGNMENT — SELECTOR IN FM POSITION

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
7.	Across FM antenna terminals with 120Ω in each lead.	106MC (Unmod.)	(FM) 106MC	DC probe to point Ⓐ. Common to chassis.	A14	Adjust for maximum deflection.

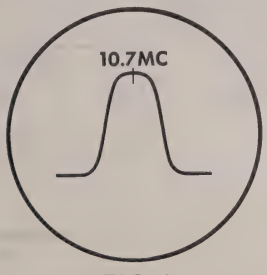


FIG. 1

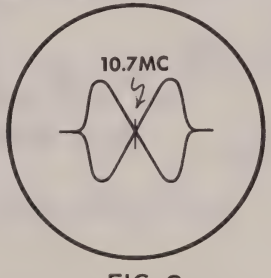
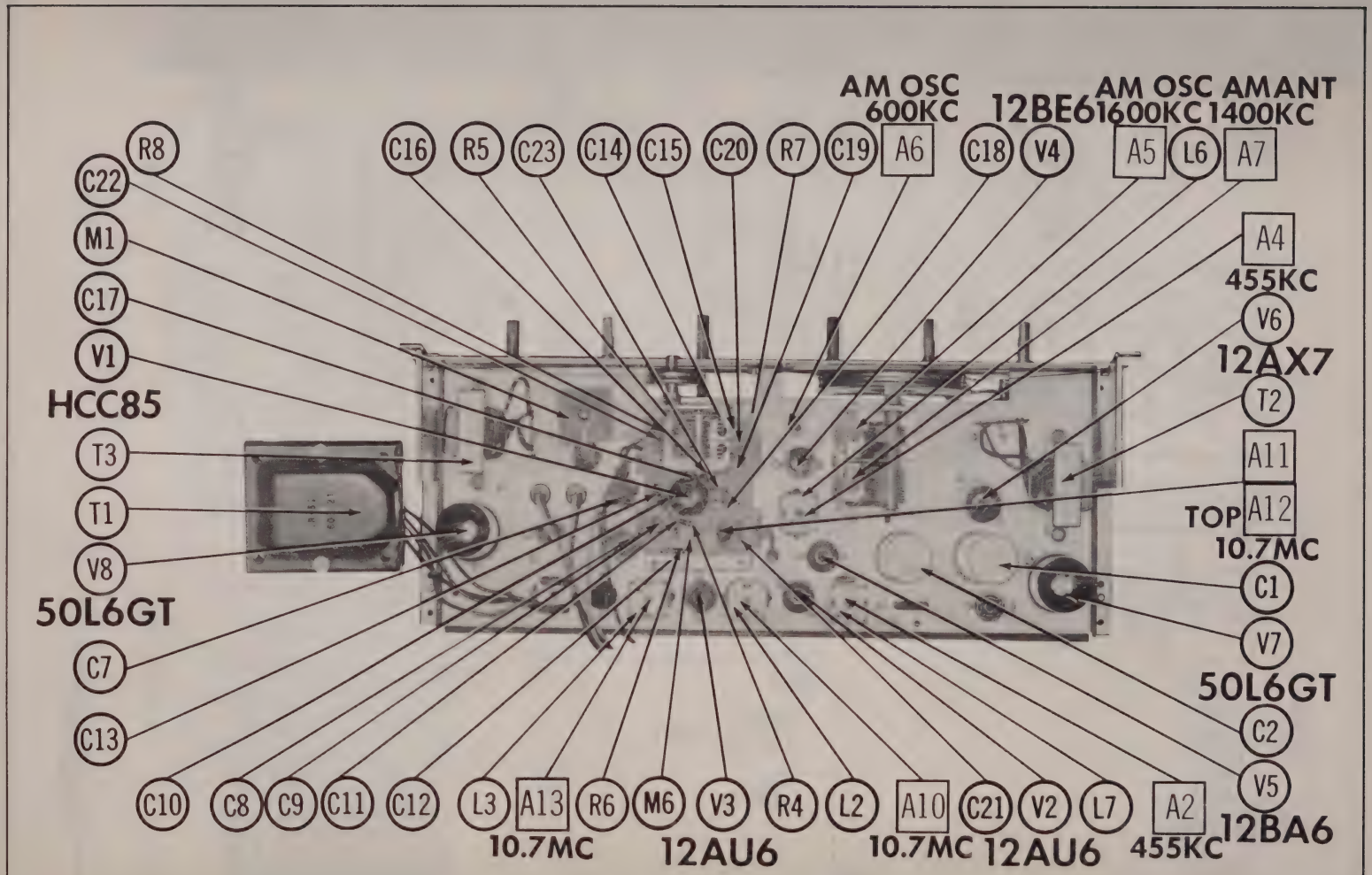


FIG. 2



CHASSIS-TOP VIEW

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	TYPE (• GENERAL ELECTRIC • RAYTHEON • SYLVANIA •)
V1	FM RF Amp. -FM Conv.	HCC85
V2	1st FM IF Amplifier	12AU6
V3	2nd FM IF Amplifier	12AU6
V4	AM Converter	12BE6
V5	AM IF Amplifier	12BA6
V6	Channel 1 AF Amp. - Channel 2 AF Amp.	12AX7
V7	Channel 1 Output	50L6GT
V8	Channel 2 Output	50L6GT

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA DECCA PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	▲80	160	CE-145	PWH3-13-70				TVL-2442.2 TVA-1420	
B	■100	160							
C	60	160							
C2A	▲40	160	CE-146	AFH2-29	B0240	FP221	TMD-2250	TVL-2520	
B	■40	160							
C3	10	50		PRS1320	BBR10-50	TC32	TD-10-50	TVA-1304	
C4	4	50		PRS1400	BBR4-50	TT50X4	TD-4-50	TVA-1402	
C5	4	50		PRS1400	BBR4-50	TT50X4	TD-4-50	TVA-1402	
C6	100	35NP			BR10015	TC496 † TC496 †		TVANS-1310.1*	

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.
† Connect negative terminals together.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C7	5000 1500V		DAC-9	DD16-502	HVE16D5	3CCD-502	UAC-250	BL-D50
C8	5000 1500V		DAC-9	DD16-502	HVE16D5	3CCD-502	UAC-250	BL-D50
C9	5 N750 + .5mmf		N750-SI 5.0	TCN-5	C10V5U	CCTN-050	CN7-550	10TCU-V50
C10	3.5 N033							
C11	1000		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C12	1000		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C13	1000		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C14	2000		BPD-002	DD-202	BYA10D2	CCD-202	B-220	5HK-D20
C15	17 N033 5%					*		
C16	14 N033 5%					*		
C17	3 N750		N750-SI 3.3				CN7-533	10TCU-V33
C18	18 N033 5%					*		
C19								
C20	15 N470 5%					*		
C21	10 N075					*		
C22	1000		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C23	100 N750 2%			TCN-100				
C24	5000		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C25	5000		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C26	1000		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C27	5000		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C28	5000		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C29	270		DI-270	DD-271	L10T27	CCD-271	B-327	10TS-T27
C30	20000		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C31	.05 200V		P288N-05	DD-503	CUB2S5	4DP-3-503	GEM-415	2TM-S50
C32	5000		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C33	5000		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C34	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C35	5000		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C36	5000		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C37	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C38	5000 1500V		DAC-9	DD16-502	HVE16D5	3CCD-502	UAC-250	BL-D50
C39	20000		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C40	.05 400V		P488N-05	DD-503	CUB4S5	4DP-3-503	GEM-415	4TM-S50
C41	5000		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C42	5000		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C43	.05 400V		P488N-05	DD-503	CUB4S5	4DP-3-503	GEM-415	4TM-S50

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA DECCA PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	3meg	½	VC-334	B-85	A47-3meg-Z	Q13-140	U57	Volume, Channel 1 (FM)
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
R2A	3meg	½	VC-334	B-85	A47-3meg-Z	Q13-140	U57	Volume, Channel 2 (AM)
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
R3A	500K		VC-333	B-60	AD47-500K-Z		FA55A	Tone, Channel 2 (AM)
B	500K			SR-60	Not Req.		RU55A	Tone, Channel 1 (FM)
C	Shaft			Not Req.	FS-3		CS3500	
D	Switch			KR-1	SWE-12		US41	

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA IRC PART No.	WORKMAN TV PART No.	REMARKS
R4	100K			
R5	4700Ω			
R6	150Ω			
R7	470K			
R8	1000Ω			
R9	330Ω			
R10	330Ω			
R11	100Ω			
R12	100K			
R13	330Ω			
R14	2.2meg			
R15	22K			
R16	2.2meg			
R17	100Ω			
R18	470K			

ITEM No.	RATING	REPLACEMENT DATA IRC PART No.	WORKMAN TV PART No.	REMARKS
R19	6.8meg			
R20	220K			
R21	47K			
R22	150Ω			
R23	6.8meg			
R24	220K			
R25	47K			
R26	150Ω			
R27	270Ω 1W			
R28	330Ω 1W			
R29	1200Ω 1W			
R30	82Ω 5W	PW5-82	5W-SQ-82	
R31	22Ω 2W			
R32	160Ω 10W	PW10-160	10W-SQ-160	
R33	200Ω 10W	PW10-200	10W-SQ-200	

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	DECCA PART No.	REPLACEMENT DATA
K1	Ratio Detector Filter	(3) 300mmf, 1000mmf, 68Ω, 1000Ω, 1500Ω, (2) 6800Ω, 68K		Aerovox PA-694 Centralab PC-342 Sprague C-12
K2	AM Diode RF Filter	100mmf, 100mmf, 47K		Aerovox PA-97 Centralab PC-50 Sprague D-1

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA DECCA PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	Workman TV PART No.	NOTES
L1	Fil. Choke (1uh)	①	BC-561	4602	RTC-8515	T855	① IRC Part #CLA
L2	2nd FM IF		FM-254	1463	RTC-8599	T633	
L3	Ratio Detector		FM-255	1465	RTC-8600	T635	
L4	Loopstick		BC-419	705-A		T523	
L5	AM Osc.		BC-393	69-OSC	RTC-8646	T503	
L6	1st AM IF		BC-352	12-C1	RTC-8632	T607	
L7	2nd AM IF		BC-353	12-C2	RTC-8633	T608	

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	REPLACEMENT DATA DECCA PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T1	117V@ .68A	117V@ .600A AC		TR-61					

PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA					NOTES
	PRI.	SEC.	DECCA PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	2600Ω	3-4Ω	TR-137	A-3025①	A-3876	26S58①	S-1X	① Drill new mounting holes.
T3	2600Ω	3-4Ω	TR-137	A-3025①	A-3876	26S58①	S-1X	

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	DECCA PART No.	QUAM PART No.	
SP1	4"	PM	3-4Ω	SPK-38	4A1	
SP2	10"	PM	3-4Ω	SPK-61	10A6A	
SP3	4"	PM	3-4Ω	SPK-38	4A1	

POWER RECTIFIERS

ITEM No.	RATING	REPLACEMENT DATA				NOTES
	CURRENT (Measured)	DECCA PART No.	RCA PART No.	SARKES TARZIAN PART No.	SYLVANIA PART No.	
M1	.120A	*	1N1763 ♦	250 *	SR500 ♦	* Selenium ♦ Silicon

SIGNAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA				NOTES
		DECCA PART No.	GENERAL ELECTRIC PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
M2	1N542			1N295	1N295	FM Detector } Matched
M3	1N542			1N295	1N295	FM Detector } Pair
M4	1N876			1N60	1N60	AM Detector

PHONO CARTRIDGE & NEEDLES

*NEEDLE LISTINGS SHOWN ARE FOR RESPECTIVE REPLACEMENT CARTRIDGES ONLY.

ITEM No.	REPLACEMENT DATA								NOTES
	DECCA PART No.		ASTATIC PART No.		ELECTRO-VOICE PART No.		SONOTONE PART No.		
	CARTRIDGE	NEEDLE*	CARTRIDGE	NEEDLE*	CARTRIDGE	NEEDLE*	CARTRIDGE	NEEDLE*	
M5			86-TS-TB	N7-7 * & N8-3 *	96T	Not Req.	12TH-S	Not Req.	

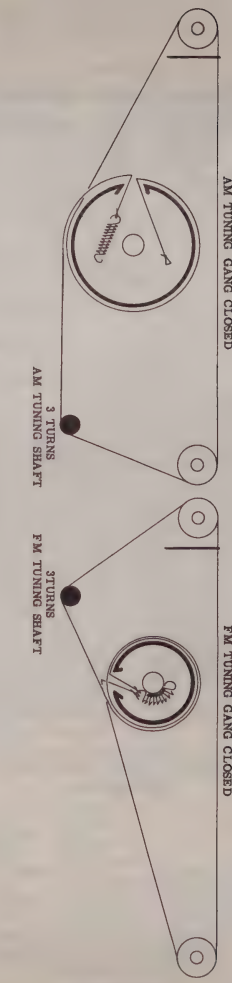
MISCELLANEOUS

ITEM No.	PART NAME	DECCA PART No.	NOTES
M6	FM Tuner		Complete
M7	Tuning Cap.		AM, 2 Gang (Ant. 28—391mmf, Osc. 15—107mmf)
M8	Switch		Function Selector (Rotary Type)

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord (Interlock Type)	Use BELDEN No. 8874
Low-Loss Shielded Lead (Interconnecting)	Use BELDEN No. 8401
Phono Pick-up Arm Cable	Use BELDEN No. 8430 (Two Conductor - Twisted)

DIAL CORD STRINGING



MODEL 12BT

TRADE NAME	Ford Models 12BT (C1TF-18805) For 1961 Conventional and Tilt Cab Ford Trucks 12BU (C1UF-18805) For 1961 Econoline Ford Trucks
MANUFACTURER	The Bendix Corp., Bendix Radio Div., Baltimore 4, Maryland
TYPE SET	Battery Operated 2 Tube-2 Transistor Custom Built Truck AM Receiver
POWER SUPPLY	12 Volt Storage Battery RATING 1.3 Amp. @ 12.6 Volts DC
TUNING RANGE—BROADCAST	540 — 1600KC

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested Alignment Tools:
A1 thru A4..... GENERAL CEMENT #8282, 8606, 8606-L, 9295, 9440
WALSCO #2526, 2543, 2544, 2545
A5, A6..... GENERAL CEMENT #8721, 8722
WALSCO #2519
A8, A9, A10..... GENERAL CEMENT #8271, 8279, 8897, 9050-L, 9150
WALSCO #2521, 2524

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	High side thru .1mfd to pin 9 (grid) of Converter. Low side to chassis.	262.5KC (400% Mod.)	High end stop.	Across voice coil.	A1, A2, A3, A4	Adjust for maximum output.
2.	Antenna receptacle thru dummy (Fig. 1)	1605KC	"	"	A5, A6, A7	"
	Step 3 is not necessary unless the tuner has been tampered with or components replaced. If necessary, back tuning cores (A8, A9, A10) out of coils. Repeat Step 2.					
3.	Antenna receptacle thru dummy (Fig. 1).	1200KC	Tuner carriage .285" movement from high end stop.	Across voice coil.	A8, A9, A10	Adjust for maximum output. Repeat Steps 2 and 3.
4.	With radio installed in car and antenna fully extended, tune in a weak station near 1600KC and adjust A7 for maximum output.					

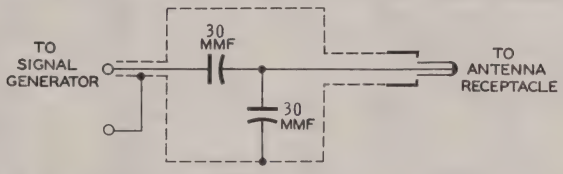


FIG. 1

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1961 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America

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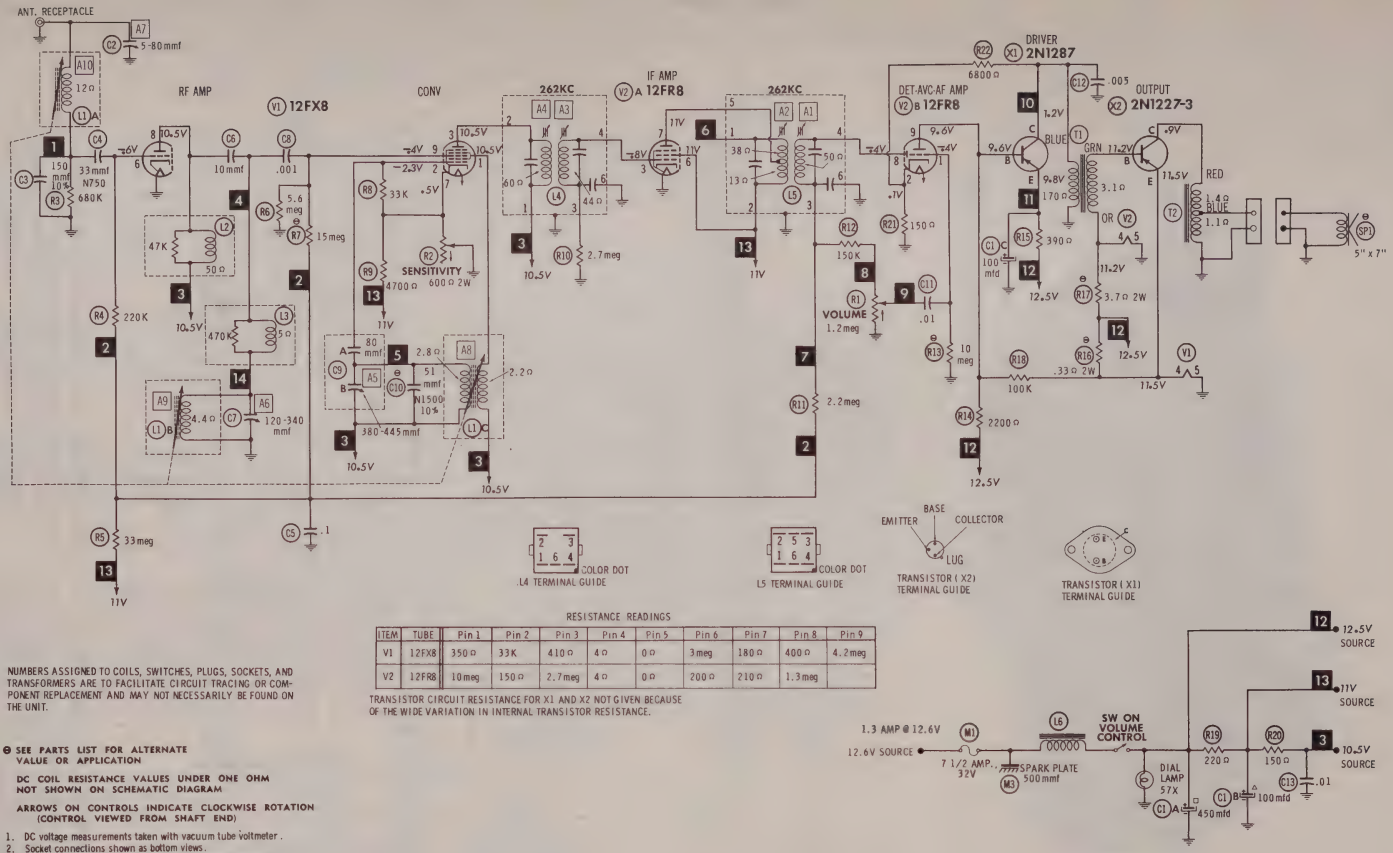

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12FX8	350Ω	33K	410Ω	4Ω	0Ω	3meg	180Ω	400Ω	4.2meg
V2	12FR8	10meg	150Ω	2.7meg	4Ω	0Ω	200Ω	210Ω	1.3meg	

TRANSISTOR CIRCUIT RESISTANCE FOR X1 AND X2 NOT GIVEN BECAUSE OF THE WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE.

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

Θ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

1. DC voltage measurements taken with vacuum tube voltmeter.
2. Socket connections shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Battery voltage maintained at 12.6 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

A PHOTOFACT STANDARD NOTATION SCHEMATIC with CIRCUITRACE®

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FORD MODELS 12BT, 12BU

PARTS LIST AND DESCRIPTIONS

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Shielded Hook-up Wire	Use BELDEN No. 8885
Bonding Strap	Use BELDEN No. 8661

TUBES

ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
	• GENERAL ELECTRIC •			• RAYTHEON • SYLVANIA •	
V1	RF Amp.-Converter	12FX8	V2	IF Amp.-Det.-AVC-AF Amp.	12FR8

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA			NOTES
			RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	2N1287	Driver	2N362			PNP
X2	2N1227-3	Output	2N301			PNP Note 1

Note 1. When replacing, apply silicone grease to both sides of insulator. Tighten mounting screws securely.

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	BENDIX PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	▪450	16	2091503-2	PWH3-00-90		WP300.8 †		PCLS-3026.3*	
B	▲100	16							
C	100	16							*

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.
† Use printed circuit adapter kit FPA.

FIXED CAPACITORS

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C2	5-80	#219083-4				462		
C3	150 10%		1469-00015	TCZ-150	22R5T15	CM-19B-151K	MCB236	MS-315
C4	33 N750		N750-DI 33	DTN-33	C10Q33U	CCTN-330	CN7-433	10TCU-Q33
C5	.1 100V		P215N-1	DF-104	BC2P1J	IDP-2-104	ACE-401	2SE-P10
C6	10		DI-SI 10	TCZ-10	C10C10C	CCTO-100	GP410	10TCC-Q10
C7	120-340	#2091418-2				465		
C8	.001		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C9A	80		NPO-DI 82	DTZ-82	C10Q82U	CCTO-820	CNO-482	10TCC-Q82
B	380-445	#2091418-1				*		
C10	51 N1500 10%	Note 1						
C11	.01		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C12	.005		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C13	.1 100V		P215N-1	DF-104	BC2P1J	IDP-2-104	ACE-401	2SE-P10

▪ Bendix Part Number.
Note 1. Value varies (33-100mfd). Replace with original value.
* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	BENDIX PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1A	1.2meg	½	2091466-1	AB-70				Volume
B	Shaft			AK-33				
C	Bushing			AK-31				
D	Switch			KR-4				Power Off-On
R2	600Ω	2(WW)	219555-19		39-600	112-600	FL-600	Sensitivity

PRINTED BOARD

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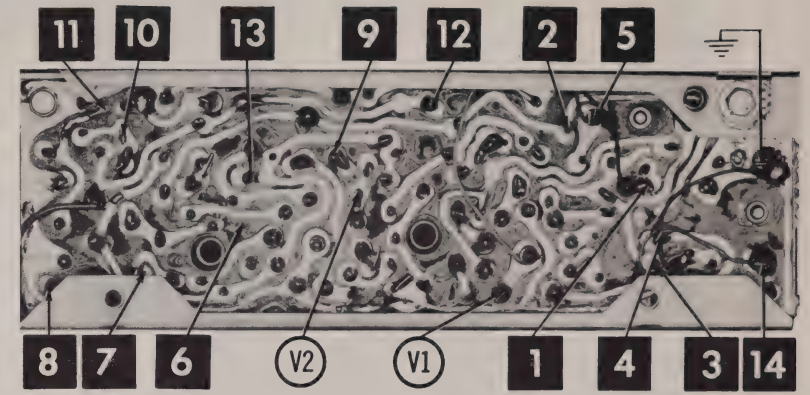
ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED



RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA			ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN TV PART No.	REMARKS			IRC PART No.	WORKMAN TV PART No.	REMARKS
R3	680K				R13	10meg			Note 2
R4	220K				R14	2200Ω			
R5	33meg				R15	390Ω			
R6	5.6meg				R16	.33Ω 2W			Note 3
R7	15meg			Note 1	R17	3.7Ω 2W			Note 4
R8	33K				R18	100K			
R9	4700Ω				R19	220Ω			
R10	2.7meg				R20	150Ω			
R11	2.2meg				R21	150Ω			
R12	150K				R22	6800Ω			

Note 1. Value varies (10-22meg). Replace with original value.
Note 2. Value varies (33-10meg). Replace with original value.
Note 3. Value varies (.3-.5Ω@25° C). Replace with same value.
Note 4. Value varies (3.2-4.2Ω). Replace with same value.

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		BENDIX PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	Workman TV PART No.	
L1A	Ant.	①					① Part of M2
B	RF	①					② Includes 47K
C	Osc.	①					③ Includes 470K
L2	RF Choke	2090088-13 ②					
L3	RF Choke	2090088-8 ③					
L4	Input IF	2090907-7					
L5	Output IF	2090908-5					
L6	Hash Choke (1.1MH)	2091107-3					

PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA					NOTES
	PRI.	SEC.	BENDIX PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	6.5	1	2090815-5					

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE	REPLACEMENT DATA					NOTES
	PRI.	BENDIX PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	12Ω Tap @ 6-8Ω	2090849-5					

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	BENDIX PART No.	QUAM PART No.	
SP1	5"x 7"	PM	6-8Ω	2091178-2 *	57A15Z8	* Used in Model 12BT
	5"x 7"	PM	6-8Ω	2091490-1 †		† Used in Model 12BU

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			BENDIX PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M1	SFE	7½ A 32V			3070715 (SFE 7½A 32V)	155009	SFE 7½	HRH

MISCELLANEOUS

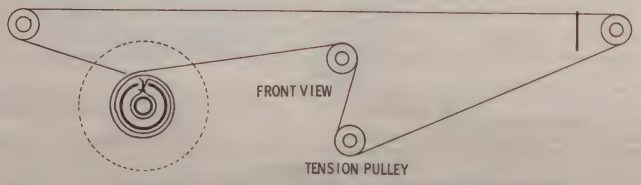
ITEM No.	PART NAME	BENDIX PART No.	NOTES
M2	Tuner	2091464-1	
M3	Spark Plate	220267-20	500mmf

CABINETS & CABINET PARTS

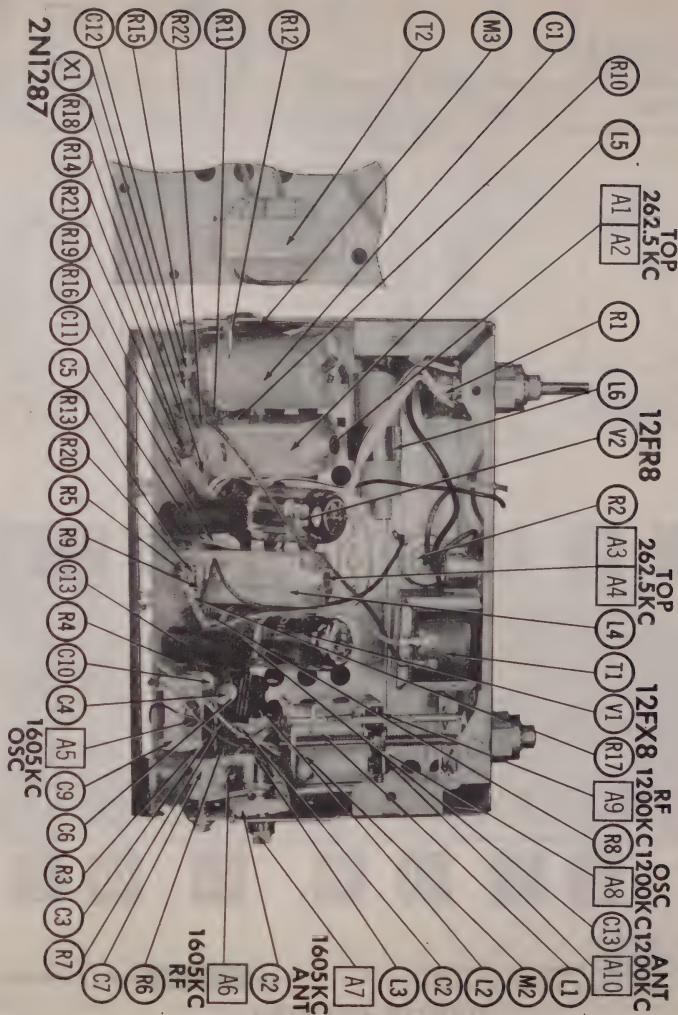
(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Dial Glass	2091454-1	
Dial Pointer	2091459-1	
Knob	2091440-1	

TUNING DRIVE CORD STRINGING



CHASSIS—TOP VIEW



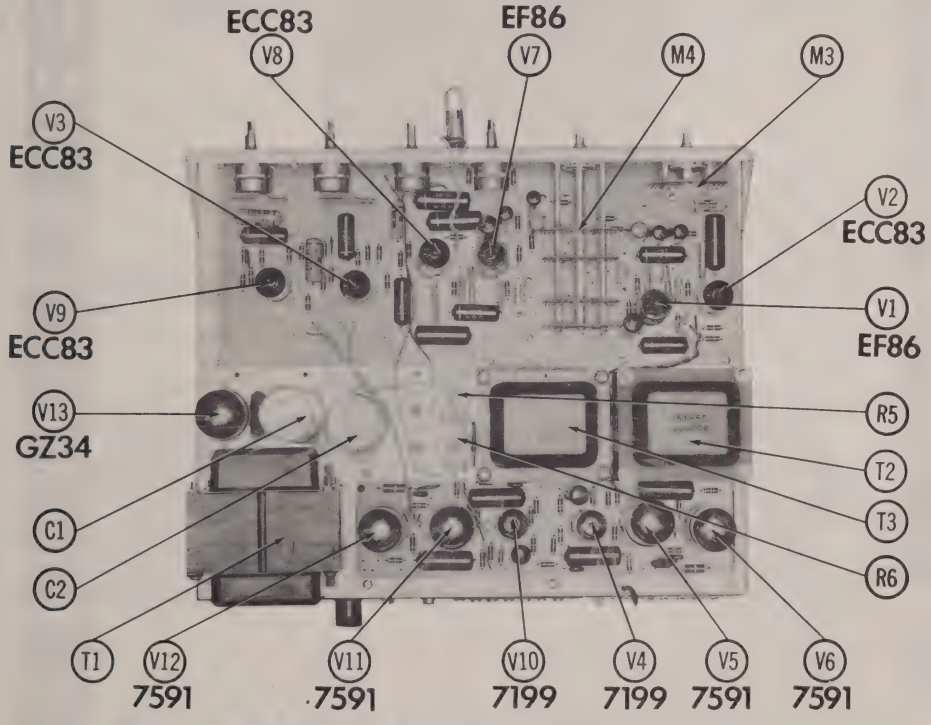
PHOTOFACT® Folder with CIRCUITRACE®

HEATH MODELS AA-50, W-AA-50

HEATH MODELS
AA-50, W-AA-50

TRADE NAME	Heath Models AA-50 (Kit), W-AA-50 (Wired)
MANUFACTURER	Heath Co., A Subsidiary of Daystrom, Inc., Benton Harbor, Michigan
TYPE SET	AC Operated 13 Tube Stereo Amplifier
POWER SUPPLY	105 — 125 Volts AC, 60 Cycles RATING 165 Watts, 1.6 Amp. @117 Volts AC

HEATH MODELS
AA-50, W-AA-50



HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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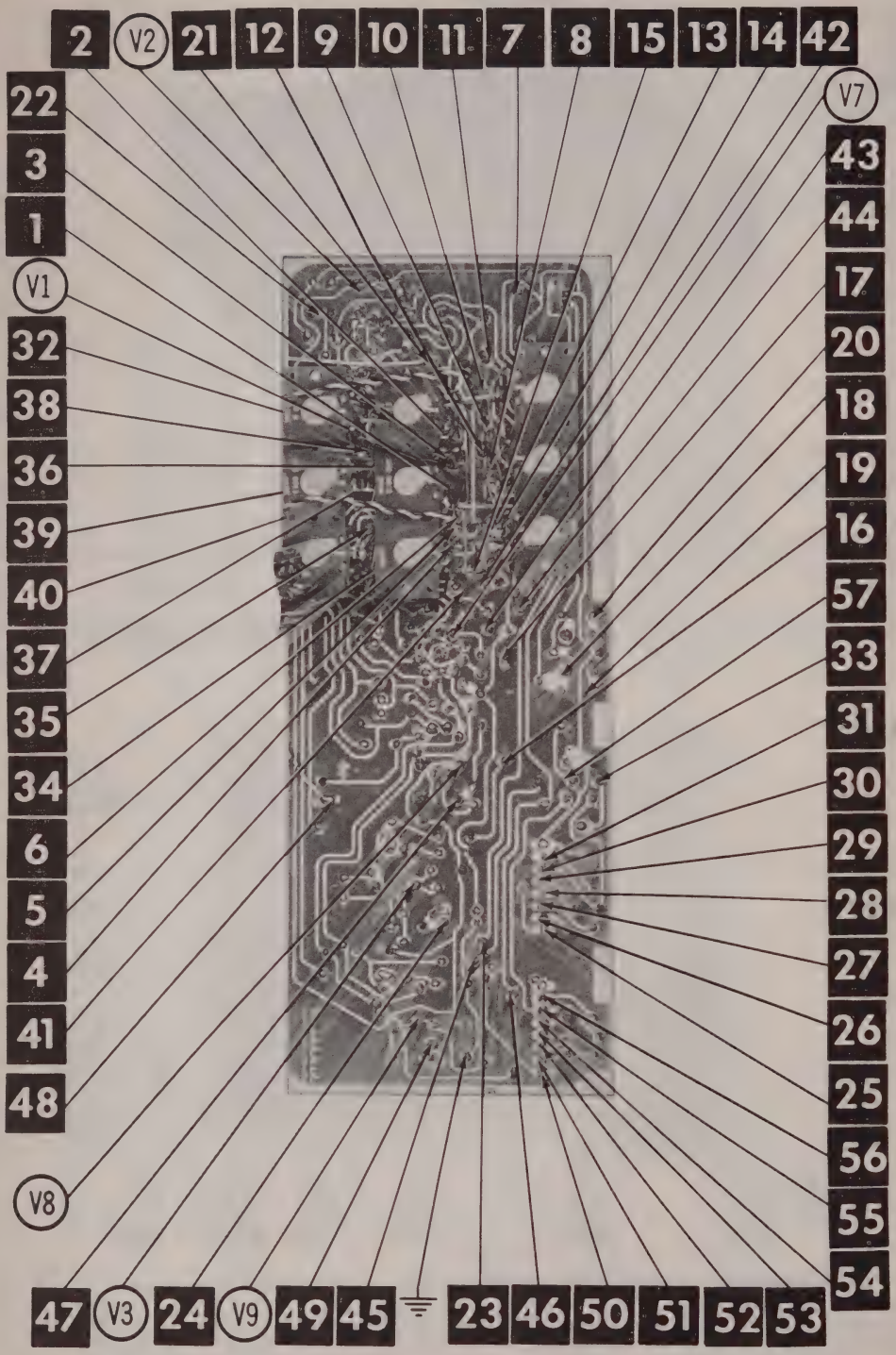
KV628

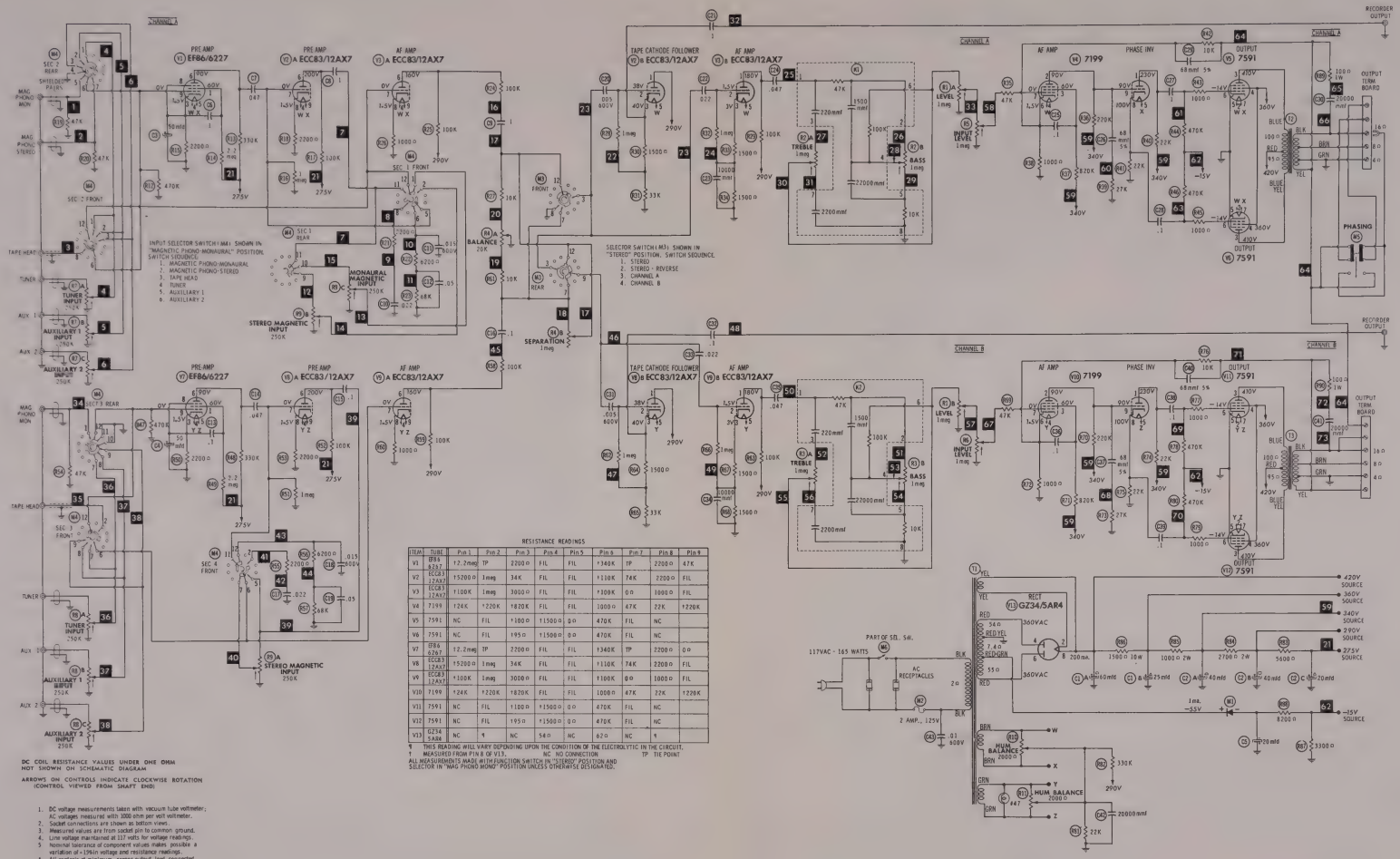
SET 544 FOLDER 7



A Howard W. Sams CIRCUITRACE® Photo

PREAMP PRINTED BOARD

ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	EF86 6267	12.2meg	TP	2200Ω	FIL	FIL	¶340K	TP	2200Ω	47K
V2	ECC83 12AX7	150Ω	1meg	34K	FIL	FIL	¶110K	74K	220Ω	FIL
V3	ECC83 12AX7	¶100K	1meg	300Ω	FIL	FIL	¶100K	0Ω	100Ω	FIL
V4	7199	124K	¶220K	¶82OK	FIL	FIL	100Ω	47K	22K	¶220K
V5	7591	NC	FIL	¶100Ω	¶150Ω	0Ω	470K	FIL	NC	
V6	7591	NC	FIL	195Ω	¶150Ω	0Ω	470K	FIL	NC	
V7	EF86 6267	12.2meg	TP	2200Ω	FIL	FIL	¶340K	TP	2200Ω	0Ω
V8	ECC83 12AX7	¶5200Ω	1meg	34K	FIL	FIL	¶110K	74K	220Ω	FIL
V9	ECC83 12AX7	¶100K	1meg	300Ω	FIL	FIL	¶100K	0Ω	100Ω	FIL
V10	7199	124K	¶220K	¶82OK	FIL	FIL	100Ω	47K	22K	¶220K
V11	7591	NC	FIL	¶100Ω	¶150Ω	0Ω	470K	FIL	NC	
V12	7591	NC	FIL	195Ω	¶150Ω	0Ω	470K	FIL	NC	
V13	GZ34 5AR4	NC	¶	NC	54Ω	AC	62Ω	NC	¶	

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
† MEASURED FROM PIN 8 OF V13. NC NO CONNECTION
ALL MEASUREMENTS MADE WITH FUNCTION SWITCH IN "STEREO" POSITION AND SELECTOR IN "MAG PHONO MONO" POSITION UNLESS OTHERWISE DESIGNATED. TP TIE POINT

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured with 1000 ohm per volt voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ± 15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

A PHOTOFACT STANDARD NOTATION SCHEMATIC with CIRCUITRACE

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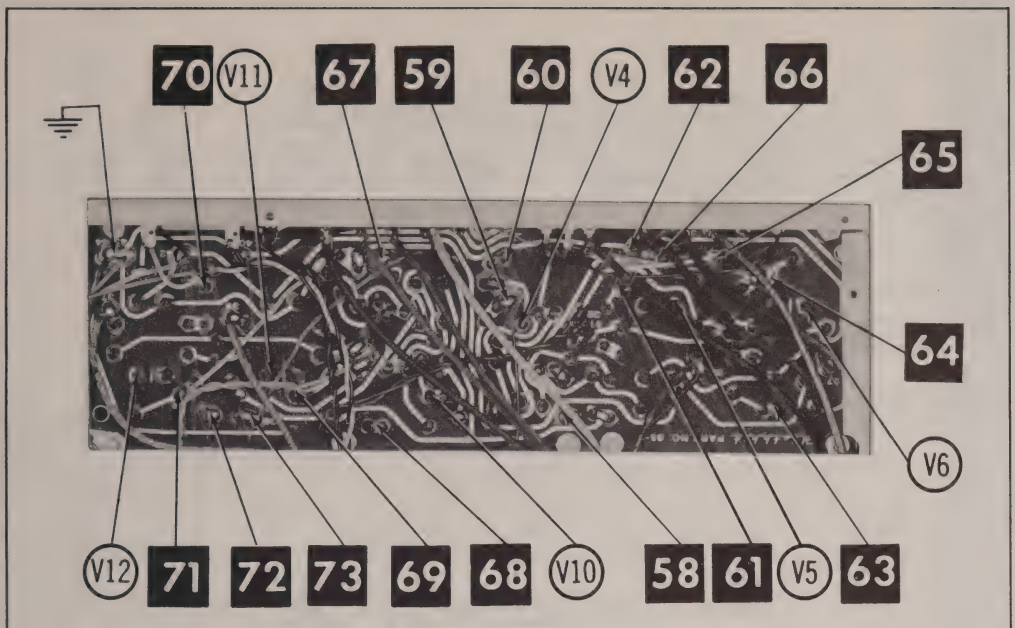
HEATH MODELS AA-50, W-AA-50



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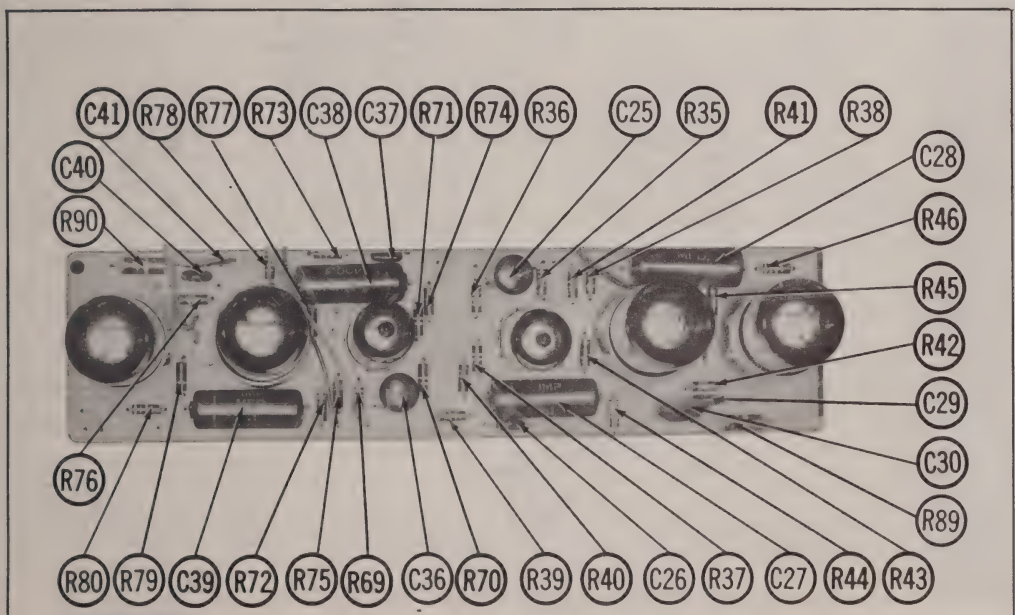
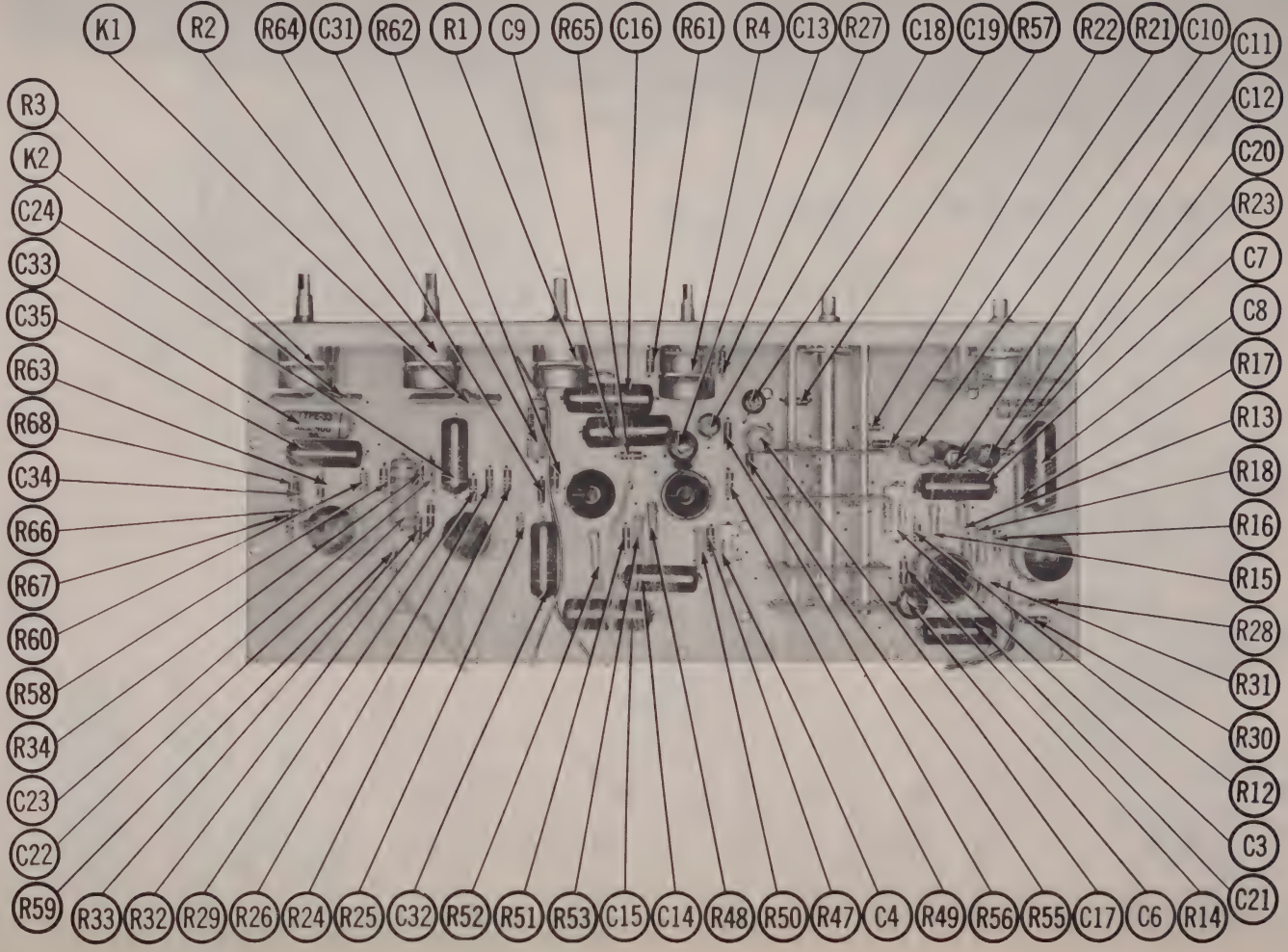
OUTPUT
PRINTED BOARD

ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED



OUTPUT PRINTED BOARD



PREAMP PRINTED BOARD

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	TYPE (• GENERAL ELECTRIC • RAYTHEON • SYLVANIA •)
V1	Channel A Preamp.	EF86/6267
V2	Channel A Preamp. - Tape Cath. Follower	ECC83/12AX7
V3	Channel A AF Amp.	ECC83/12AX7
V4	Channel A AF Amp. - Channel A Phase Inv.	7199
V5	Channel A Output	7591
V6	Channel A Output	7591
V7	Channel B Preamp.	EF86/6267
V8	Channel B Preamp. - Tape Cath. Follower	ECC83/12AX7
V9	Channel B AF Amp.	ECC83/12AX7
V10	Channel B AF Amp. - Channel B Phase Inv.	7199
V11	Channel B Output	7591
V12	Channel B Output	7591
V13	Rectifier	GZ34/5AR4

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA HEATH PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	▲60	500	25-101	AFH3-52		FP399.5		TVLS-2927*	
B	▲25	450							
C2A	▲40	450	25-52	AFH3-43-50	C0340	FP376.9	TMT-3745	TVL-3786	
B	■40	350							
C	▲20	350							
C3	50	10	25-55	PTT-10050	NLW50-10	TT10X50	MLV50-10	TE-1119	
C4	50	10	25-55	PTT-10050	NLW50-10	TT10X50	MLV50-10	TE-1119	
C5	20	150	25-19	PRS1440	BBR20-150	TC45	TD-20-150	TVA-1410	

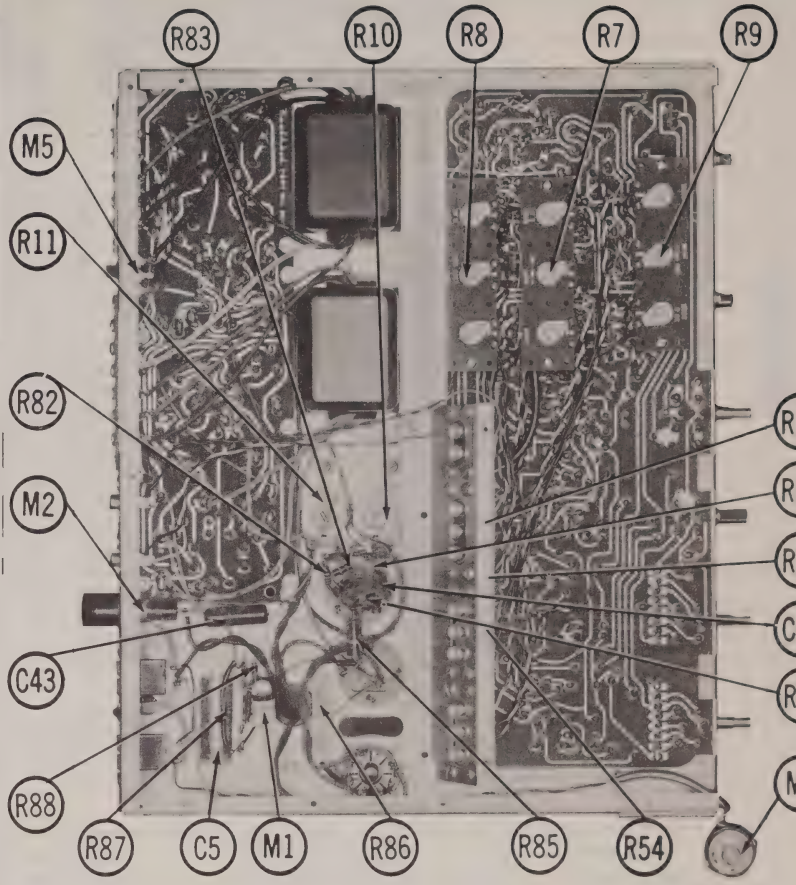
* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C6	.1 400V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P10
C7	.047 400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C8	.1 400V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P10
C9	.1 400V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P10
C10	.022 400V		P488N-022	DD-203	CUB4S22	4DP-2-223	GEM-4122	4TM-S22
C11	.015 600V		P688N-015	DD-153	CUB6S15	6DP-3-153	GEM-6115	6TM-S15
C12	.05 200V		P288N-05	DD-503	CUB2S5	4DP-3-503	GEM-415	2TM-S50
C13	.1 400V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P10
C14	.047 400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C15	.1 400V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P10
C16	.1 400V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P10
C17	.022 400V		P488N-022	DD-203	CUB4S22	4DP-2-223	GEM-4122	4TM-S22
C18	.015 600V		P688N-015	DD-153	CUB4S15	6DP-3-153	GEM-6115	6TM-S15
C19	.05 200V		P288N-05	DD-503	CUB2S5	4DP-3-503	GEM-415	2TM-S50
C20	.005 600V		P688N-005	D6-502	CUB6D5	6DP-3-503	GEM-625	6TM-D50
C21	.1 200V		P288N-1	DF-104	CUB2P1	2DP-3-104	GEM-201	2TM-P10
C22	.022 400V		P488N-022	DD-203	CUB4S22	4DP-2-223	GEM-4122	4TM-S22
C23	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C24	.047 400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C25	.1 400V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P10
C26	68 5%		1469-000068	TCZ-68	22R5Q68	CM-19B-680J	CNO-468	MS-468
C27	.1 400V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P10
C28	.1 400V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P10
C29	68 5%		1469-000068	TCZ-68	22R5Q68	CM-19B-680J	CNO-468	MS-468
C30	20000		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C31	.005 600V		P688N-005	D6-502	CUB6D5	6DP-3-503	GEM-625	6TM-D50
C32	.1 200V		P288N-1	DF-104	CUB2P1	2DP-3-104	GEM-201	2TM-P10
C33	.022 400V		P488N-022	DD-202	CUB4S22	4DP-2-223	GEM-4122	4TM-S22
C34	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C35	.047 400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C36	.1 400V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P10
C37	68 5%		1469-000068	TCZ-68	22R5Q68	CM-19B-680J	CNO-468	MS-468
C38	.1 400V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P10
C39	.1 400V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P10
C40	68 5%		1469-000068	TCZ-68	22R5Q68	CM-19B-680J	CNO-468	MS-468
C41	20000		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C42	20000		BPD-02	DD-203	BYB6S2	CCD-202	B-120	5HK-S20
C43	.01 600V		P688N-01	D6-103	CUB6S1	6DP-2-103	GEM-611	6TM-S10

CHASSIS—BOTTOM VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA HEATH PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	1meg	½	12-15					Level, Channel A
B	1meg	½						Level, Channel B
R2A	1meg	½	12-13					Treble, Channel A
B	1meg	½						Bass, Channel A
R3A	1meg	½	12-13					Treble, Channel B
B	1meg	½						Bass, Channel B
R4A	20K	½	12-14					Balance
B	1meg	½						Separation (Open ⓐ low end)
R5A	1meg	½	10-103	TT-70	B47-1meg-Z	B13-137	TA16A	Input Level, Channel A
B	Shaft			Not Req.	Not Req.	TM4	Not Req.	
R6A	1meg	½	10-103	TT-70	B47-1meg-Z	B13-137	TA16A	Input Level, Channel B
B	Shaft			Not Req.	Not Req.	TM4	Not Req.	
R7A	250K	½	13-3					Tuner Input, Channel A
B	250K	½						Aux. 1 Input, Channel A
C	250K	½						Aux. 2 Input, Channel A
R8A	250K	½	13-3					Tuner Input, Channel B
B	250K	½						Aux. 1 Input, Channel B
C	250K	½						Aux. 2 Input, Channel B
R9A	250K	½	13-3					Stereo Mag. Input, Channel B
B	250K	½						Stereo Mag. Input, Channel A
C	250K	½						Monaural Mag. Input
R10A	2000Ω	½	10-52	AB-6	B47-2000-S	B11-110	PTA252L	Hum Balance, Channel A
B	Shaft			AK-1	Not Req.	TM4	Not Req.	
R11A	2000Ω	½	10-52	AB-6	B47-2000-S	B11-110	PTA252L	Hum Balance, Channel B
B	Shaft			AK-1	Not Req.	TM4	Not Req.	

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA IRC PART No.	WORKMAN TV PART No.	REMARKS
R12	470K			
R13	330K			
R14	2.2meg			
R15	2200Ω			
R16	1 meg			
R17	100K			
R18	2200Ω			
R19	47K			
R20	47K			
R21	2200Ω			
R22	6200Ω			
R23	68K			
R24	100K			
R25	100K			
R26	1000Ω			
R27	10K			
R28	1meg			
R29	100K			
R30	1500Ω			
R31	33K			
R32	1meg			
R33	1500Ω			
R34	1500Ω			
R35	47K			
R36	220K			
R37	820K			
R38	1000Ω			
R39	27K			
R40	22K			
R41	22K			
R42	10K			
R43	1000Ω			
R44	470K			
R45	1000Ω			
R46	470K			
R47	470K			
R48	330K			
R49	2.2meg			
R50	2200Ω			
R51	1meg			
R52	100K			
R53	2200Ω			
R54	47K			
R55	2200Ω			
R56	6200Ω			
R57	68K			
R58	100K			
R59	100K			
R60	1000Ω			
R61	10K			
R62	1meg			
R63	100K			
R64	1500Ω			
R65	33K			
R66	1meg			
R67	1500Ω			
R68	1500Ω			
R69	47K			
R70	220K			
R71	820K			
R72	1000Ω			
R73	27K			
R74	22K			
R75	22K			
R76	10K			
R77	1000Ω			
R78	470K			
R79	1000Ω			
R80	470K			
R81	22K			
R82	330K			
R83	5600Ω			
R84	2700Ω 2W			
R85	1000Ω 2W			
R86	1500Ω 10W	PW10-1500	10W-SQ-1500	
R87	3300Ω			
R88	8200Ω			
R89	100Ω 1W			
R90	100Ω 1W			

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	HEATH PART No.	REPLACEMENT DATA
K1	Tone Comp.	220mmf, 1500mmf, 2200mmf, 22000mmf, 10K, 47K, 100K	84-13	Sprague TC-35
K2	Tone Comp.	220mmf, 1500mmf, 2200mmf, 22000mmf, 10K, 47K, 100K	84-13	Sprague TC-35

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	REPLACEMENT DATA HEATH PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T1	117V ⓐ 1.6A	720VCT ⓐ .200A DC Tap ⓐ 50V ⓐ .001A DC	5V ⓐ 1.9A	54-89					
	SEC. 3	SEC. 4	SEC. 5						
	6.3V ⓐ 2A	6.3V ⓐ 2A							

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA HEATH PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T2	7600Ω CT	16Ω Tap ⓐ 8Ω, 4Ω	51-58				S-31A	
T3	7600Ω CT	16Ω Tap ⓐ 8Ω, 4Ω	51-58				S-31A	

POWER RECTIFIERS

ITEM No.	RATING CURRENT (Measured)	REPLACEMENT DATA HEATH PART No.	RCA PART No.	SARKES TARZIAN PART No.	SYLVANIA PART No.	NOTES
M1	.001	57-22 ♦		Model 10 ♦		♦ Selenium

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA HEATH PART No. FUSE	HEATH PART No. HOLDER	LITTELFUSE PART No. FUSE	LITTELFUSE PART No. HOLDER	BUSS PART No. FUSE	BUSS PART No. HOLDER
M2	3AG	2A 125V S/B	421-3		313002 (3AG 2A 125V S/B)	342001	MDL 2	HKP

MISCELLANEOUS

ITEM No.	PART NAME	HEATH PART No.	NOTES
M3	Switch	63-208	Function Selector (Printed Board, Rotary)
M4	Switch	63-206	Selector (Printed Board, Rotary Wafer Type)
M5	Switch	60-2	Phase (DPDT Slide Type)
M6	Switch	63-183	Power Off-On

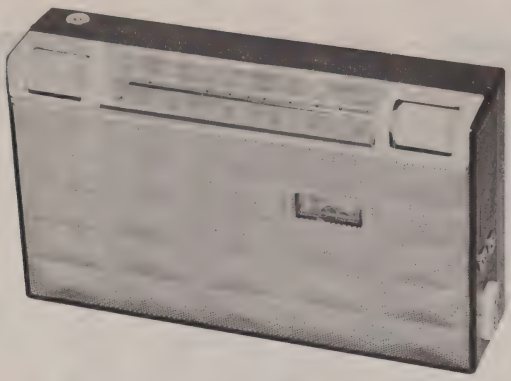
WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)

PHOTOFACT® Folder with CIRCUITRACE®

**KOWA MODEL
KTS-1B**



TRADE NAME	Kowa Model KTS-1B
SUPPLIER	Longwood Radio Distributors, Inc., 1261 Broadway, Suite 704, New York 1, N. Y.
TYPE SET	Battery Operated Transistorized Portable BC-SW Receiver
POWER SUPPLY	6 Volts DC
RATING	8MA @ 6 Volts DC (No Signal, Min. Volume)
	20MA @ 6 Volts DC (Signal, Normal Volume)
TUNING RANGE—BROADCAST	535 — 1605KC
SHORT WAVE	1.6 — 5.5MC

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested Alignment Tools:

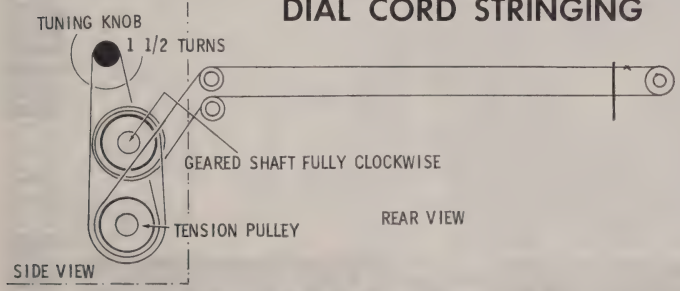
A1 thru A4.....GENERAL CEMENT #8607, 9291, 9294
WALSCO #2520, 2522, 2523, 2524, 2534, 2537

A5, A7, A8, A10.....GENERAL CEMENT #5000, 5003, 5066, 8276, 8290, 9087, 9089
WALSCO #2512, 2525, 2526

A6, A9.....GENERAL CEMENT #9440

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	Loop	455KC (400% Mod.)	(MW) Tuning gang fully open.	Across voice coil.	A1, A2, A3, A4	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
2.	"	1600KC	1600KC	"	A5	"
3.	"	600KC	600KC	"	A6	"
4.	"	1500KC	1500KC Signal.	"	A7	"
5.	"	5.5MC	(SW) 5.5MC	"	A8	"
6.	"	1.6MC	1.6MC	"	A9	"
7.	"	4.0MC	4.0MC	"	A10	Adjust for maximum output. Repeat Steps 2 thru 7.

DIAL CORD STRINGING



HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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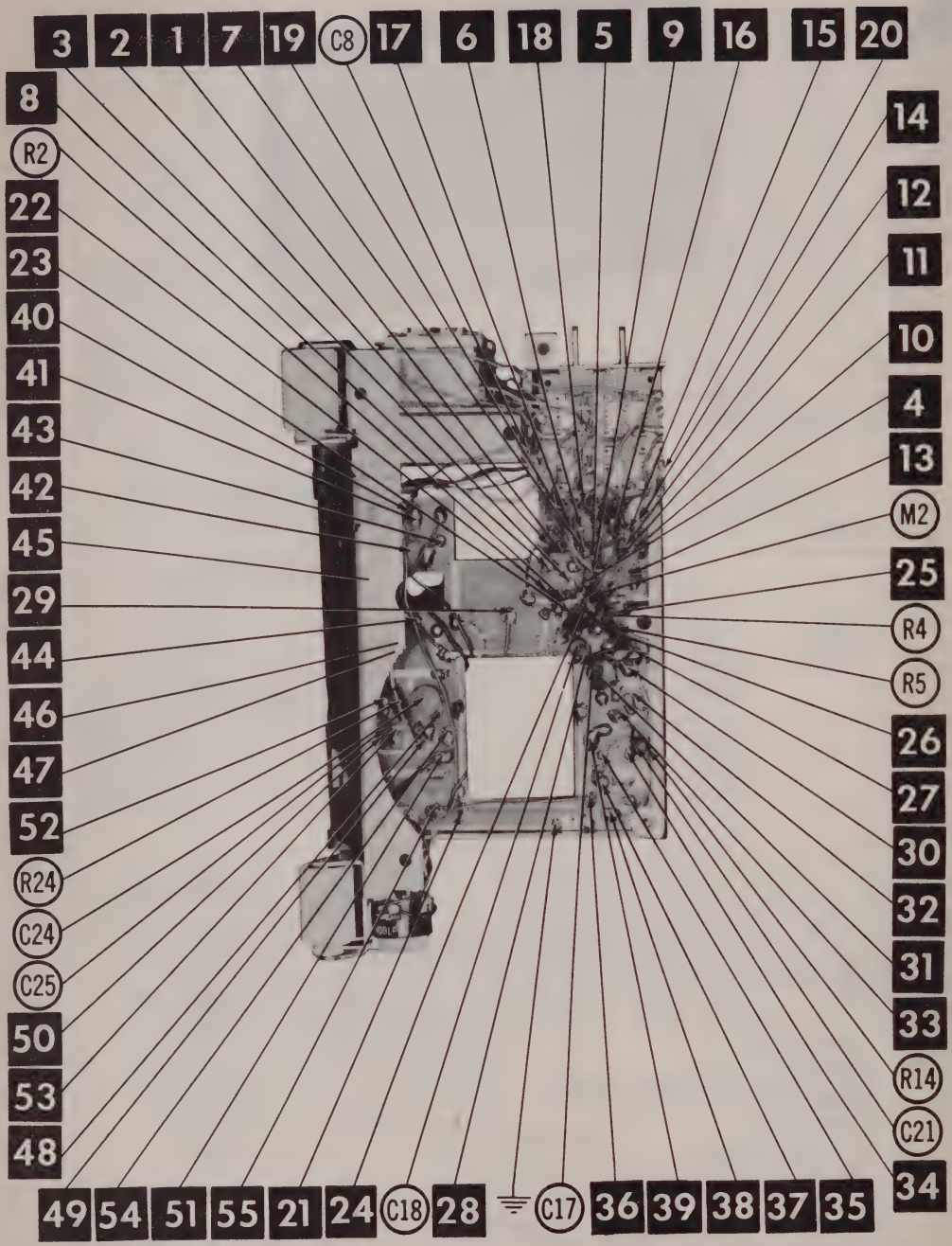
KF625

KOWA MODEL
KTS-1B
KOWA MODEL
KTS-1B
SET 544 FOLDER 8



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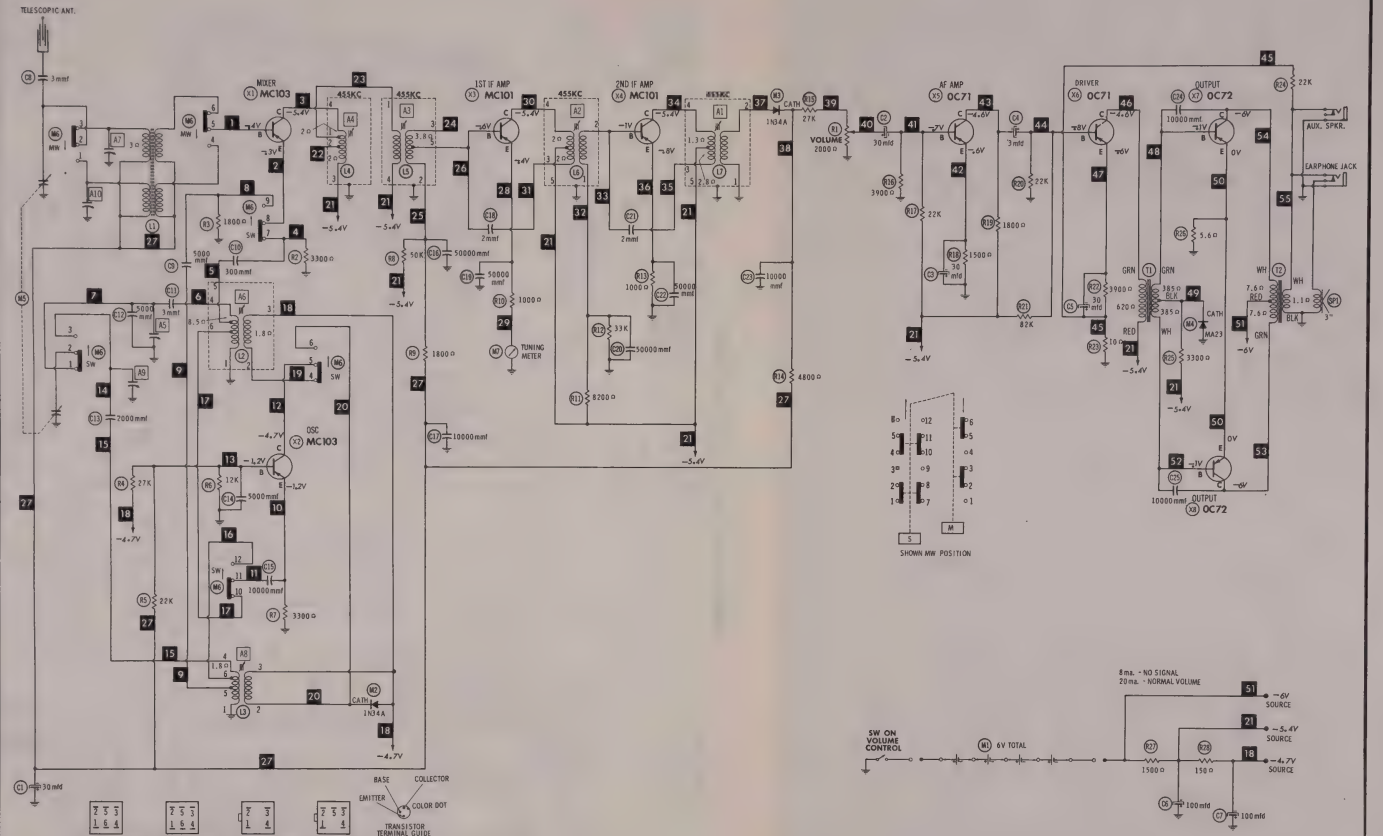
PRINTED BOARD



NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

RESISTANCE MEASUREMENTS NOT GIVEN BECAUSE OF THE WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE.

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

1. DC voltage measurements taken with vacuum tube voltmeter.
2. Socket connections or transistor terminals are shown as bottom views.
3. Measured values are from socket pin or terminal to common ground.
4. Nominal tolerance on component values makes possible a variation of ±5% in voltage and resistance readings.
5. Volume control at maximum, no signal applied for voltage measurements.

A PHOTOFACT STANDARD NOTATION SCHEMATIC with CIRCUITRACE

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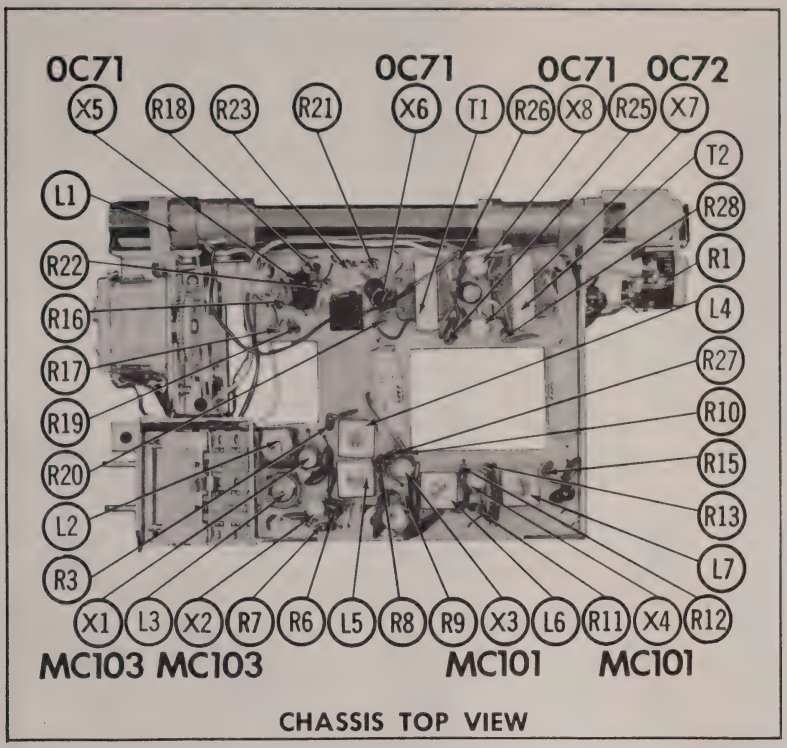
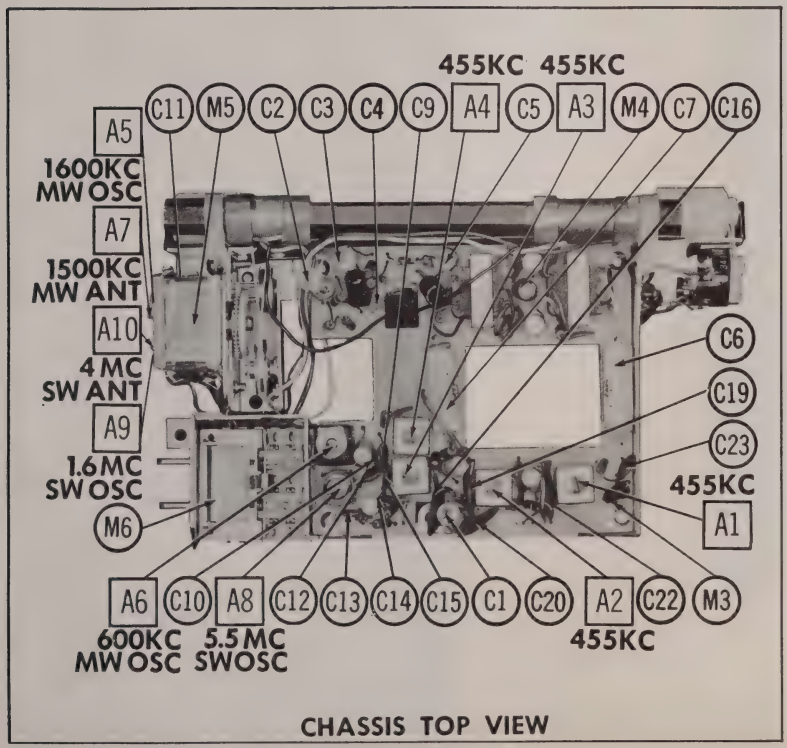
KOWA MODEL KTS-1B



CHASSIS TOP VIEW



CHASSIS TOP VIEW

PARTS LIST AND DESCRIPTIONS

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA			NOTES
			RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	MC103	Mixer		2N486		PNP
X2	MC103	Oscillator		2N486		PNP
X3	MC101	1st IF Amplifier				PNP
X4	MC101	2nd IF Amplifier				PNP
X5	OC71	AF Amplifier	2N406	2N362	2N406	PNP
X6	OC71	Driver	2N406	2N362	2N406	PNP
X7	OC72	Output	2N408	2N632	2N408	PNP
X8	OC72	Output	2N408	2N632	2N408	PNP

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT.	KOWA PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	
C1	30	3		PTT10	NLW30-6	TT6X30	MLV30-6	TE-1092	
C2	30	3		PTT10	NLW30-6	TT6X30	MLV30-6	TE-1092	
C3	30	3		PTT10	NLW30-6	TT6X30	MLV30-6	TE-1092	
C4	3	6		PTT20	NLW3-6	TT6X3	MLV5-6	TE-1082	
C5	30	3		PTT10	NLW30-6	TT6X30	MLV30-6	TE-1092	
C6	100	6		PTT30	NLW100-6	TT6X100	MLV100-6	TE-1102	
C7	100	6		PTT30	NLW100-6	TT6X100	MLV100-6	TE-1102	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C8	3		NPO-DI 3.0	DTZ-3R3	C10V3C	CCTO-3R3	CNO-533	10TCC-V33
C9	5000		BPD-005	DM-502	H-05D5	CCD-502	TA-250	TG-D50
C10	300		DI-300	DM-301	L10T3	CCD-301	GP330	10TS-T30
C11	3		NPO-DI 3.0	DTZ-3R3	C10V3C	CCTO-3R3	CNO-533	10TCC-V33
C12	5000		BPD-005	DM-502	H-05D5	CCD-502	TA-250	TG-D50
C13	2000		BPD-002	DM-202	BYA10D2	CCD-202	B-220	10TS-D20
C14	5000		BPD-005	DM-502	H-05D5	CCD-502	TA-250	TG-D50
C15	10000		C80V103AM	DM-103	H-05S1		TA-110	TG-S10
C16	50000		C80V503AM	DA-503	H-05S5		TA-150	TG-S50
C17	10000		C80V103AM	DM-103	H-05S1		TA-110	TG-S10
C18	2		NPO-DI 2.0	DTZ-2R2	C10V2C	CCTO-2R2	CNO-522	10TCC-V22
C19	50000		C80V503AM	DA-503	H-05S5		TA-150	TG-S50
C20	50000		C80V503AM	DA-503	H-05S5		TA-150	TG-S50
C21	2		NPO-DI 2.0	DTZ-2R2	C10V2C	CCTO-2R2	CNO-522	10TCC-V22
C22	50000		C80V503AM	DA-503	H-05S5		TA-150	TG-S50
C23	10000		C80V103AM	DM-103	H-05S1		TA-110	TG-S10
C24	10000		C80V103AM	DM-103	H-05S1		TA-110	TG-S10
C25	10000		C80V103AM	DM-103	H-05S1		TA-110	TG-S10

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	KOWA PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1	2000Ω	1/10						Volume & Switch

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA			ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN TV PART No.	REMARKS			IRC PART No.	WORKMAN TV PART No.	REMARKS
R2	3300Ω				R12	33K			
R3	1800Ω				R13	1000Ω			
R4	27K				R14	4800Ω			
R5	22K				R15	27K			
R6	12K				R16	3900Ω			
R7	3300Ω				R17	22K			
R8	50K				R18	1500Ω			
R9	1800Ω				R19	1800Ω			
R10	1000Ω				R20	22K			
R11	8200Ω				R21	82K			

RESISTORS (cont)

ITEM No.	RATING	REPLACEMENT DATA			ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN TV PART No.	REMARKS			IRC PART No.	WORKMAN TV PART No.	REMARKS
R22	3900Ω				R26	5.6Ω			
R23	10Ω				R27	1500Ω			
R24	22K				R28	150Ω			
R25	3300Ω								

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		KOWA PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	Workman TV PART No.	
L1A	BC Loopstick						
B	SW Loopstick						
L2	BC Osc.						
L3	SW Osc.						
L4	1st IF						
L5	2nd IF						
L6	3rd IF						
L7	4th IF						

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA					NOTES
	PRI.	SEC.	KOWA PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	1	1CT	SA-405		TA-30	TR-2		

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA					NOTES
	PRI.	SEC.	KOWA PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	300Ω CT	6-8Ω	SA-406		TA-21	TR-102		

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	KOWA PART No.	QUAM PART No.	
SP1	3"	PM	6-8Ω			

BATTERIES

ITEM No.	VOLTAGE	KOWA PART No.	REPLACEMENT DATA						NOTES
			BURGESS		EVEREADY		MALLORY		
			"A"	"B"	"A"	"B"	"A"	"B"	
M1	1.5V	UM-3A *		930 *		1015 *		M-15R *	* 4 Required

SIGNAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA				NOTES
		KOWA PART No.	GENERAL ELECTRIC PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
M2	1N34A			1N34A	1N34A	Osc. Limiter
M3	1N34A			1N34A	1N34A	Detector
M4	MA23					Output Bias

MISCELLANEOUS

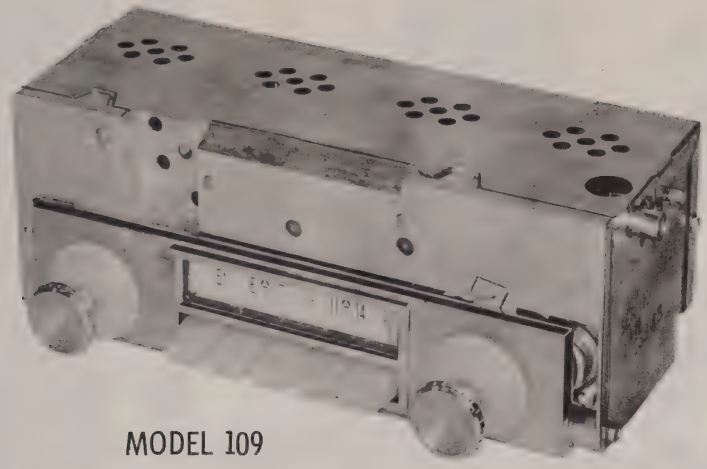
ITEM No.	PART NAME	KOWA PART No.	NOTES
M5	Tuning Cap.		2 Gang
M6	Switch		Function (Pushbutton Type)
M7	Meter		Tuning

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

PHOTOFACT® Folder with CIRCUITRACE®

MOPAR MODELS
109, 111, 113, 114



MODEL 109

TRADE NAME	Mopar Models 109 (For 1961 Plymouth RP1, RP2) 111 (For 1961 Plymouth RP1, RP2 Export Versions) 113 (For 1961 Valiant RV1) 114 (For 1961 Lancer RW1)
MANUFACTURER	Motorola Inc., 4545 W. Augusta Blvd., Chicago 51, Illinois
TYPE SET	Battery Operated 3 Tube - 2 Transistor Custom Built Automobile AM Receiver
POWER SUPPLY	12 Volt Storage Battery RATING 1 Amp. @ 12.6 Volts DC
TUNING RANGE—BROADCAST	540 — 1610KC

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested Alignment Tools:
A1, A2, A3..... GENERAL CEMENT #8282, 8606, 8606-L, 9295, 9440
WALSCO #2526, 2543, 2544, 2545
A4, A5..... GENERAL CEMENT #8271, 8279, 8897, 9050-L, 9150
WALSCO #2521, 2524
A7, A8, A9..... GENERAL CEMENT #8271, 8279, 8897
WALSCO #2521, 2524

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	Antenna receptacle thru .1mfd. Low side to chassis.	262.5KC (400% Mod.)	High end stop.	Across voice coil.	A1, A2, A3	Adjust for maximum output.
2.	Antenna receptacle thru dummy (Fig. 1).	1610KC	"	"	A4, A5, A6	"
	Step 3 is not necessary unless the tuner has been tampered with or components replaced. If necessary, back tuning cores (A7, A8, A9) out of the coils. Repeat Step 2.					
3.	Antenna receptacle thru dummy (Fig. 1).	1020KC	Tuner carriage 3/8" from high end stop.	Across voice coil.	A7, A8, A9	Adjust for maximum output. Repeat Steps 2 and 3. Recement cores.
4.	With radio installed in car and antenna fully extended, tune in a weak station near 1000KC and adjust A6 for maximum output.					

PUSHBUTTON ADJUSTMENT

1. Pull Pushbutton out.
2. Tune manually to desired station.
3. Press Pushbutton in firmly.
4. Repeat for remaining Pushbuttons.

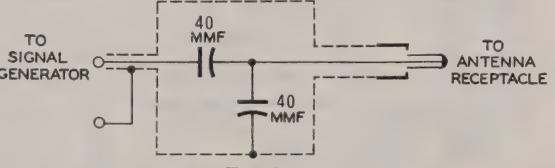


FIG. 1

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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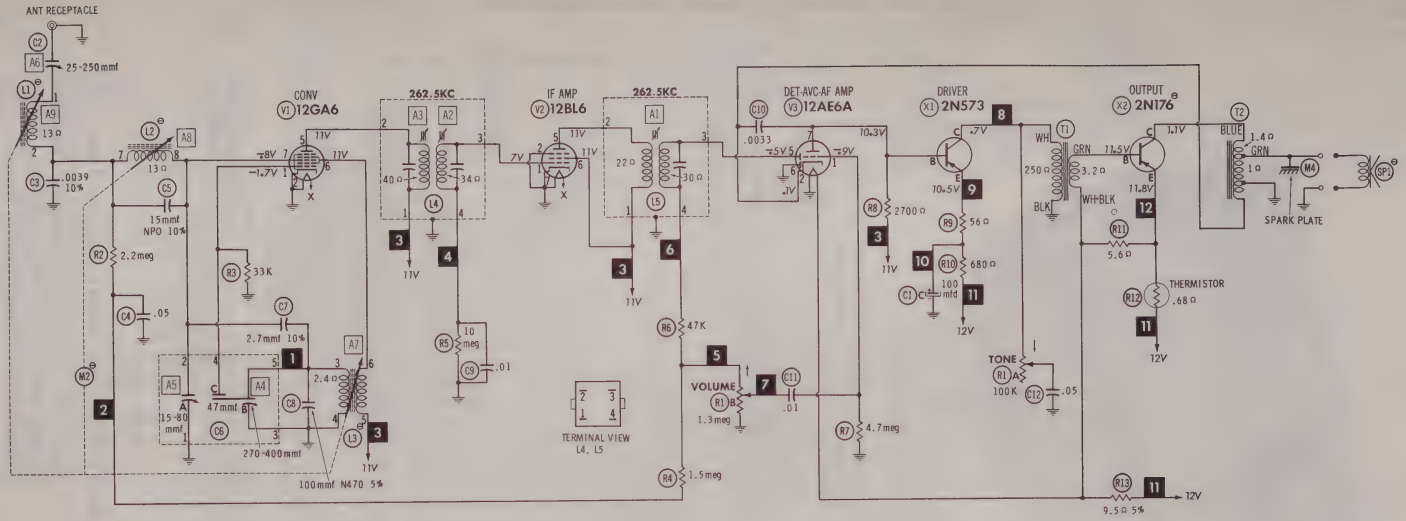
MOPAR MODELS
109, 111, 113, 114

MOPAR MODELS
109, 111, 113, 114

SET 544 FOLDER 9



NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

1. DC voltage measurements taken with vacuum tube voltmeter
2. Socket connections shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Battery voltage maintained at 12.6 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V1	12GA6	33K	0Ω	5Ω	0Ω	610Ω	560Ω	5meg
V2	12BL6	10meg	0Ω	0Ω	5Ω	580Ω	560Ω	0Ω
V3	12AE6A	4.7meg	.1Ω	0Ω	6Ω	1.3meg	0Ω	

TRANSISTOR CIRCUIT RESISTANCE FOR X1 AND X2 NOT GIVEN BECAUSE OF THE WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE.

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MOPAR MODELS 109, 111, 113, 114

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	TYPE (◆ GENERAL ELECTRIC ◆ RAYTHEON ◆ SYLVANIA ◆)
V1	Converter	12GA6
V2	IF Amplifier	12BL6
V3	Det. -AVC-AF Amplifier	12AE6A

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA: RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	NOTES
X1	2N573	Driver	2N591	2N573	2N573	PNP
X2	2N176	Output	2N176		2N176	PNP Note 1
	MN-29*	Output	2N176			PNP Note 1

Note 1. When replacing, apply DC-4 grease (Part #1M490487) or equivalent to both sides of insulator. Tighten mounting screws securely. * Alternate

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA: MOTOROLA PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	■700	16	23C563447	PWH3-00-95.5		WP300.87 †		PCLS-3027.5*	
B	▲200	16							
C	100	16							

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.
† Use printed circuit adapter kit FPA.

FIXED CAPACITORS

ITEM No.	RATING	REMARKS	REPLACEMENT DATA: AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C2	25-250	#20B563246				464		
C3	.0039 10%		DI-4000		DPMS6D39	CCD-392	JL-239	10TS-D39
C4	.05		BPD-05	DD-503	H-05S5	IDP-2-503	GP150	5HK-S50
C5	15 NPO 10%		NPO-DI 15	DTZ-15	C10Q15C	CCTO-150	CNO-415	10TCC-Q15
C6A	15-80							
B	47	#20B563378	NPO-DI 47	TCZ-47	C10Q47C	CCTO-470	CNO-447	10TCC-Q47
C	270-400							
C7	2.7 10%		NPO-SI 3.0		C10V3C	*		10TCC-V27
C8	100 N470 5%							
C9	.01		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C10	.0033		BPD-0033	DD-332	BYA10D33	CCD-332	B-233	5HK-D33
C11	.01		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C12	.05		BPD-05	DD-503	H-05S5	IDP-2-503	GP150	5HK-S50
C13	.5 100V		P288N-5		CUB2P5	IDP-4-504	GEM-205	2TM-P50

* Motorola Part Number. Not normally in distributor's stock. Available thru distributor on order to manufacturer.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: MOTOROLA PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	100K		18K564706					Tone
B	1.3meg							Volume
C	Switch							Power Off-On

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA: IRC PART No.	WORKMAN TV PART No.	REMARKS
R2	2.2meg			
R3	33K			
R4	1.5meg			
R5	10meg			
R6	47K			
R7	4.7meg			
R8	2700Ω			

ITEM No.	RATING	REPLACEMENT DATA: IRC PART No.	WORKMAN TV PART No.	REMARKS
R9	56Ω			
R10	680Ω			
R11	5.6Ω			
R12	.68Ω			
R13	9.5Ω 5%			
R14	560Ω			

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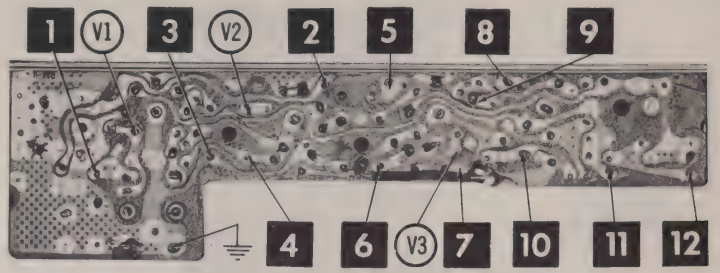
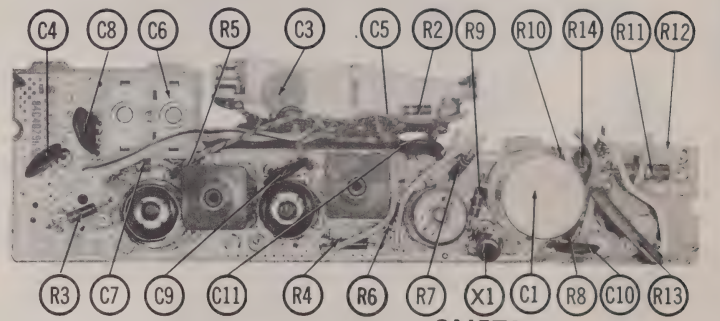
ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED





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COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA: MOTOROLA PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	Workman TV PART No.	NOTES
L1	Ant.	24B563290					Note 1
L2	RF	24B563290					Note 1
L3	Osc.	24B563293					Note 1
L4	Input IF	24K564869	BC-344	13-PH1	RTC-8644	T655	
L5	Output IF	24K40276A03					

Note 1. Part of coil and mounting plate assembly Part #1V40300A48.

FILTER CHOKE

ITEM No.	RATINGS: CURRENT (Measured)	RATINGS: DC RES.	RATINGS: INDUCTANCE (0 CURRENT 1000 ~)	REPLACEMENT DATA: MOTOROLA PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
L6	.9A	.2Ω	.0048HY	25C563445					

PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO PRI.	TURNS RATIO SEC.	REPLACEMENT DATA MOTOROLA PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T1	10	1	25C563444					

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	REPLACEMENT DATA MOTOROLA PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T2	6Ω Tap ⓐ 3-4Ω Tap ⓑ .1Ω DC Res.	25K563399					

SPEAKER

ITEM No.	TYPE SIZE	TYPE FIELD	TYPE V. C. IMP.	REPLACEMENT DATA MOTOROLA PART No.	QUAM PART No.	NOTES
SP1	6"x 9"	PM	3-4Ω	50K563103 *	69A3	* Models 109, 111
	6"x 9"	PM	3-4Ω	50D563102 ‡	69A3	‡ Models 113, 114

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA MOTOROLA PART No. FUSE	MOTOROLA PART No. HOLDER	LITTELFUSE PART No. FUSE	LITTELFUSE PART No. HOLDER	BUSS PART No. FUSE	BUSS PART No. HOLDER
M1	SFE	7½ 32V	65R122346	9K563327 ① 9K564778 ②	30707.5 (SFE 7½A 32V)	155009	SFE 7½	HRH

① Models 109, 111
② Models 113, 114

MISCELLANEOUS

ITEM No.	PART NAME	MOTOROLA PART No.	NOTES
M2	Tuner	77D40242A01	(AT326) Complete, Models 109, 111
	Tuner	77D40242A03	(AT335) Complete, Model 113
	Tuner	77D40242A04	(AT336) Complete, Model 114
M3	Spark Plate	64K530177	
M4	Spark Plate	64K530177	

CABINETS & CABINET PARTS

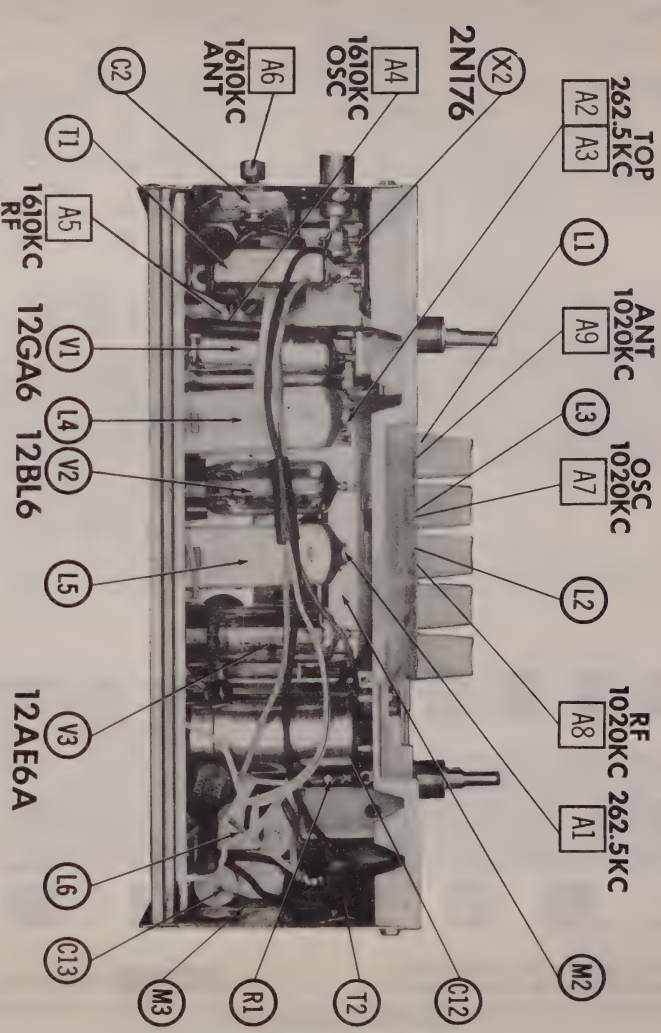
(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Dial Crystal	61A563192	
Dial Scale	34K564634	Model 109
Dial Scale	34K564636	Model 111
Dial Scale	34K564770	Model 113
Dial Scale	34K564766	Model 114
Pointer	1K563183	
Pushbutton	38B40047A05	Model 109, 111
Pushbutton	38K564779	Model 113
Pushbutton	38K564780	Model 114
Knob	36B562625	Tuning, Volume, Model 109, 111
Knob	36C40272A01	Tuning, Volume, Model 113
Knob	36B40261A01	Tuning, Volume, Model 114
Knob	36B40063A01	Tone, Dummy, Model 109, 111
Knob	36K564787	Tone, Dummy, Model 113
Knob	36K564788	Tone, Dummy, Model 114

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Shielded Hook-up Wire	Use BELDEN No. 8885
Bonding Strap	Use BELDEN No. 8661

CHASSIS—TOP VIEW



PHOTOFACT® Folder with CIRCUITRACE®

MOTOROLA MODEL X21W (Ch. HS-876)

MOTOROLA MODEL X21W (Ch. HS-876)

TRADE NAME	Motorola Model X21W (Ch. HS-876)
MANUFACTURER	Motorola Inc., 4545 W. Augusta Blvd., Chicago 51, Illinois
TYPE SET	Battery Operated Transistorized Portable AM Receiver
POWER SUPPLY	6 Volts DC
RATING	6MA @ 6 Volts DC (No Signal, Min. Volume)
TUNING RANGE	BROADCAST 532-1620KC
	10MA @ 6 Volts DC (Signal, Normal Volume)

MOTOROLA MODEL X21W (Ch. HS-876)

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested Alignment Tools: A1, A2, A3, A5 .... GENERAL CEMENT #5009, 8195, 8274, 8275, 8728, 8729, 8987, 8988, WALSCO #2515, 2531, 2543 8989

A4, A6 ..... GENERAL CEMENT #5000, 5003, 5066, 8276, 8290, 9087, 9089 WALSCO #2512, 2525, 2528

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	Loop	455KC (400~ Mod)	Tuning gang fully open	Across voice coil	A1, A2, A3	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
2.	"	1620KC	"	"	A4	"
3.	"	532KC	Tuning gang fully closed	"	A5	"
4.	"	1400KC	1400KC Signal	"	A6	"
5.	"	600KC	600KC Signal	"	A7	Adjust for maximum output by sliding antenna winding along ferrite core. Repeat steps 2, 3, 4, 5 if necessary.

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of KF720

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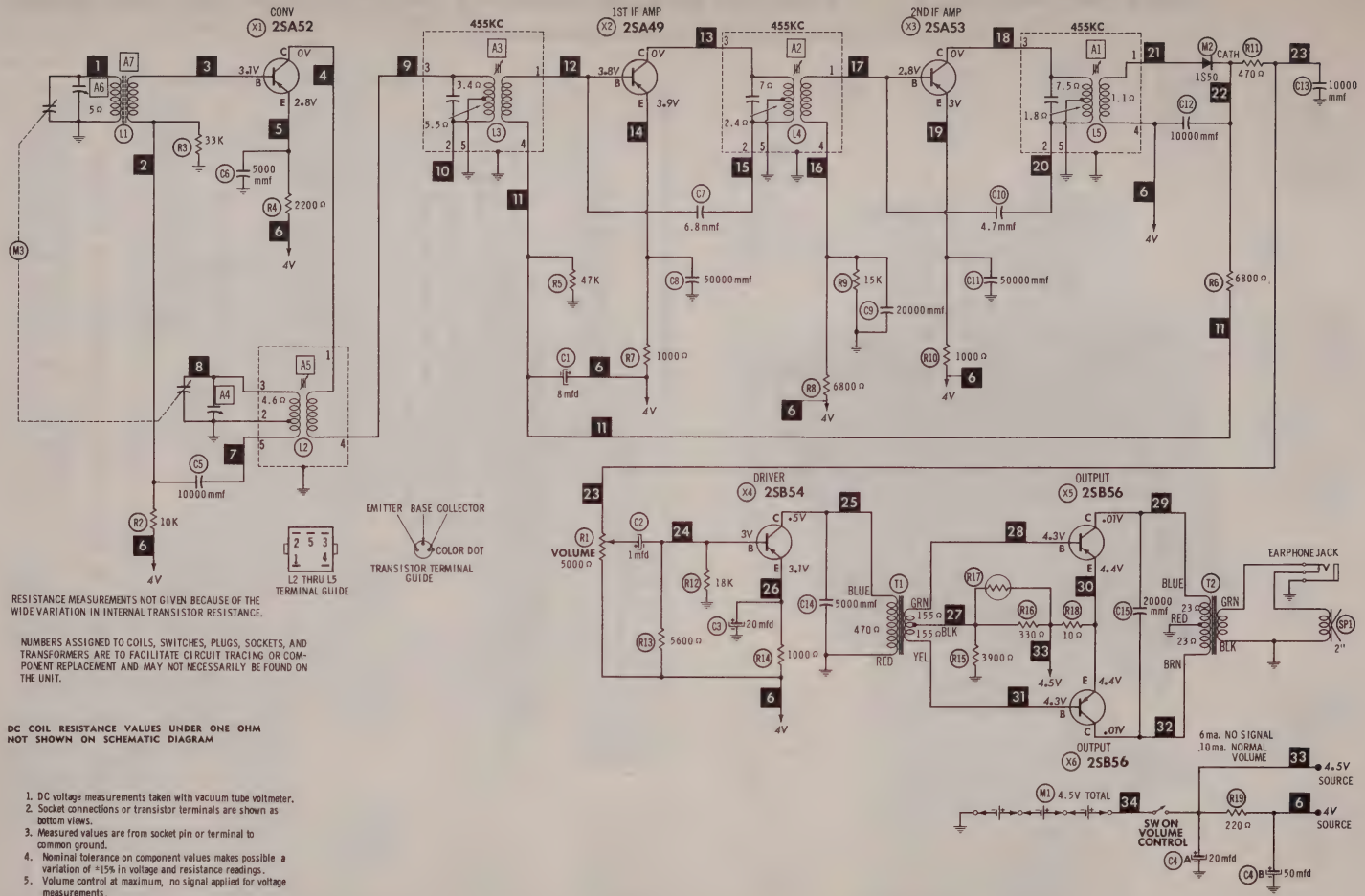

RESISTANCE MEASUREMENTS NOT GIVEN BECAUSE OF THE WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE.

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

1. DC voltage measurements taken with vacuum tube voltmeter.
2. Socket connections or transistor terminals are shown as bottom views.
3. Measured values are from socket pin or terminal to common ground.
4. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
5. Volume control at maximum, no signal applied for voltage measurements.

A PHOTOFACT STANDARD NOTATION SCHEMATIC with CIRCUITRACE™

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MOTOROLA MODEL X21W (Ch. HS-876)

PARTS LIST AND DESCRIPTIONS

WIRING DATA

General-use Unshielded Hook-up Wire .....Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA			NOTES
			RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	2SA52	Converter				PNP
X2	2SA49	1st IF Amplifier				PNP
X3	2SA53	2nd IF Amplifier				PNP
X4	2SB54	Driver	2N406			PNP
X5	2SB56	Output	2N408			PNP
X6	2SB56	Output	2N408			PNP

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	MOTOROLA PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1	8	5	23K646733			TT12X1			
C2	1	10	23P60019A15						
C3	20	3	23P60019A16						
C4A	20	5	23P60019A17						
B	50	5							

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	EMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C5	10000		C80V103AM	DM-103	H-05S1		TA-110	TG-S10
C6	5000		C80V502AM	DM-502	H-05D5		TA-150	TG-D50
C7	6.8		NPO-DI 6.8	DTZ-6R8	C10V68C	CCTO-6R8	CNO-568	10TCC-V68
C8	50000		C80V503AM	DA-503	H-05S5		TA-150	TG-S50
C9	20000		C80V203AM	DA-203	H-05S2		TA-120	TG-S20
C10	4.7		NPO-DI 4.7	DTZ-4R7	C10V47C	CCTO-4R7	CNO-547	10TCC-V47
C11	50000		C80V503AM	DA-503	H-05S5		TA-150	TG-S50
C12	10000		C80V103AM	DM-103	H-05S1		TA-110	TG-S10
C13	10000		C80V103AM	DM-103	H-05S1		TA-110	TG-S10
C14	5000		C80V502AM	DM-502	H-05D5	CCD-502	TA-250	TG-D50
C15	20000		C80V203AM	DA-203	H-05S2		TA-120	TG-S20

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	MOTOROLA PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1	5000Ω	1/4	18P60019A20	B16-214				Volume and Switch

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA			ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN TV PART No.	REMARKS			IRC PART No.	WORKMAN TV PART No.	REMARKS
R2	10K				R11	470Ω			
R3	33K				R12	18K			
R4	2200Ω				R13	5600Ω			
R5	47K				R14	1000Ω			
R6	6800Ω				R15	3900Ω			
R7	1000Ω				R16	330Ω			
R8	6800Ω				R17	Temp. Comp.			Pt. #6K644680
R9	15K				R18	10Ω			
R10	1000Ω				R19	220Ω			

PRINTED BOARD

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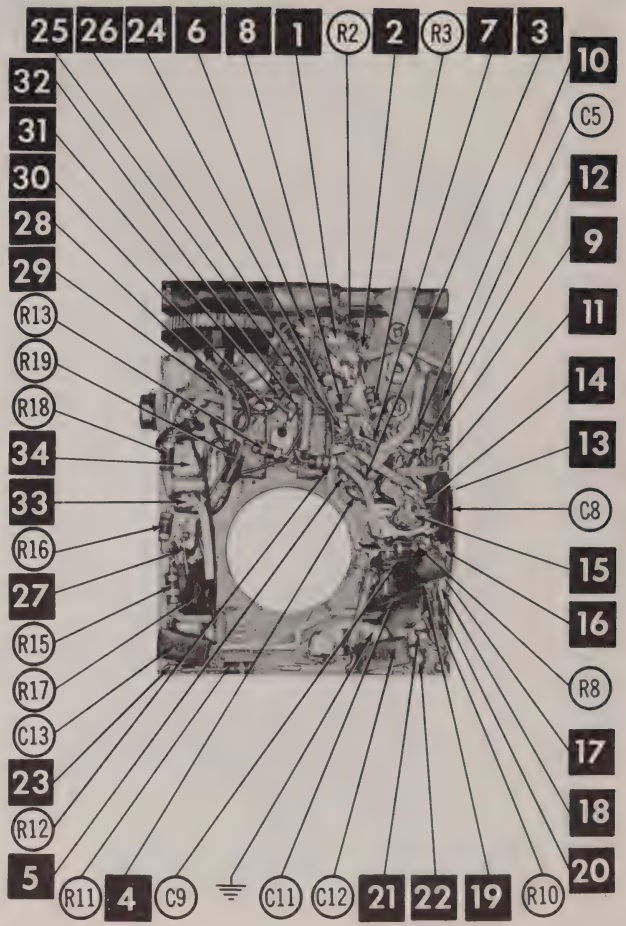


PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		MOTOROLA PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	Workman TV PART No.	
L1	Loopstick	24P60019A05					
L2	Oscillator	24P60019A06					
L3	1st IF	24P60019A07					
L4	2nd IF	24P60019A08					
L5	3rd IF	24P60019A09					

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA					NOTES
	PRI.	SEC.	MOTOROLA PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	2.7	1	25P60019A10					

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA					NOTES
	PRI.	SEC.	MOTOROLA PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	1000Ω CT	6-8Ω	25P60019A11					

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	MOTOROLA PART No.	QUAM PART No.	
SP1	2"	PM	6-8Ω	50B60545A01		

BATTERIES

ITEM No.	VOLTAGE	MOTOROLA PART No.	REPLACEMENT DATA						NOTES
			BURGESS		EVEREADY		MALLORY		
			"A"	"B"	"A"	"B"	"A"	"B"	
M1	1.5V			N		904		M-910F	3 Required.

SIGNAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA				NOTES
		MOTOROLA PART No.	GENERAL ELECTRIC PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
M2	1850	48P60019A12		1N60	1N60	Detector (Pigtail)

MISCELLANEOUS

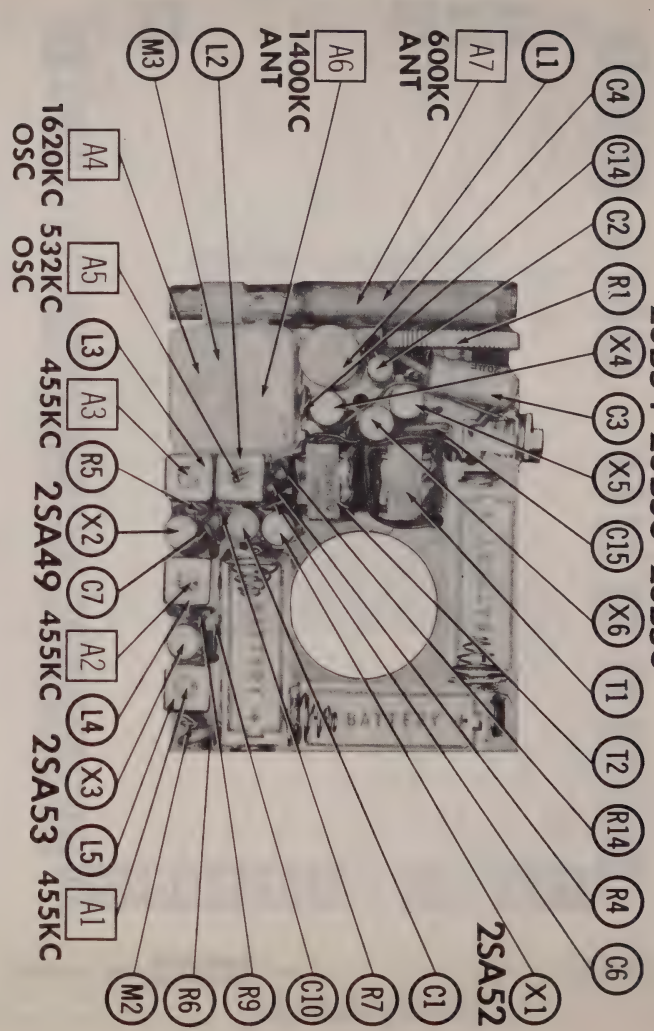
ITEM No.	PART NAME	MOTOROLA PART No.	NOTES
M3	Tuning Cap.	19P60019A13	2 Gang
	Printed Board	84P60019A04	Early Versions, Less All Components, Includes Earphone Jack Holder, & Battery Terminals, & Battery Terminal Mounting Eyelets
	Printed Board	1P60019A51	Late Versions, Same as above

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Dial Scale	34P60019A27	
Knob	36P60019A28	Tuning
Knob	36P60019A32	Volume
Cabinet Back	16P60019A38	Early Versions
Cabinet Back	1V60030A57	Late Versions
Cabinet Front	16P60019A37	

CHASSIS—TOP VIEW



PHOTOFACT® Folder with CIRCUITRACE®

PACO MODEL ST-35W

PACO MODEL ST-35W

PACO MODEL ST-35W

TRADE NAME	Paco Model ST-35W
MANUFACTURER	Paco Electronics Co., Inc., 70-31 84th Street, Glendale 27, L.I., N. Y.
TYPE SET	AC Operated 10 Tube FM Tuner
POWER SUPPLY	110 – 120 Volts AC, 60 Cycles
TUNING RANGE—FREQ. MOD.	88 – 108MC RATING 58 Watts, .55 Amp. @117 Volts AC

SET 544 FOLDER 11

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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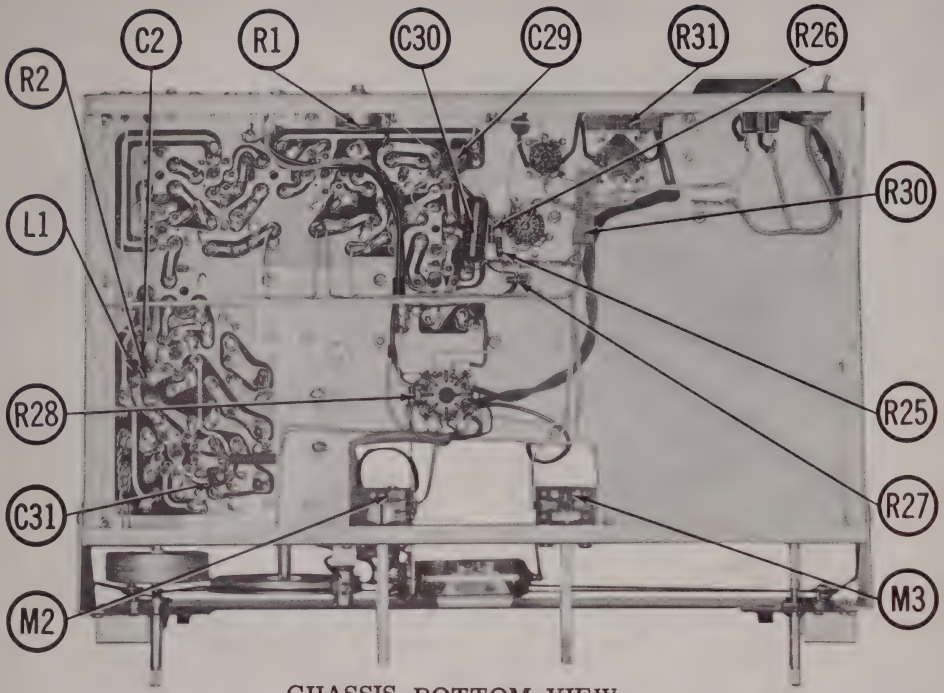
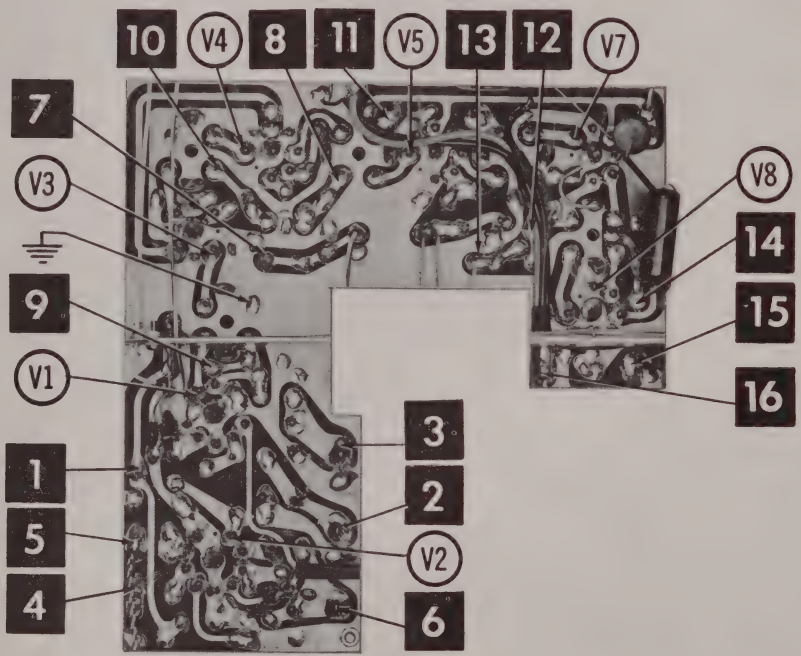
KJ630



CHASSIS BOTTOM VIEW



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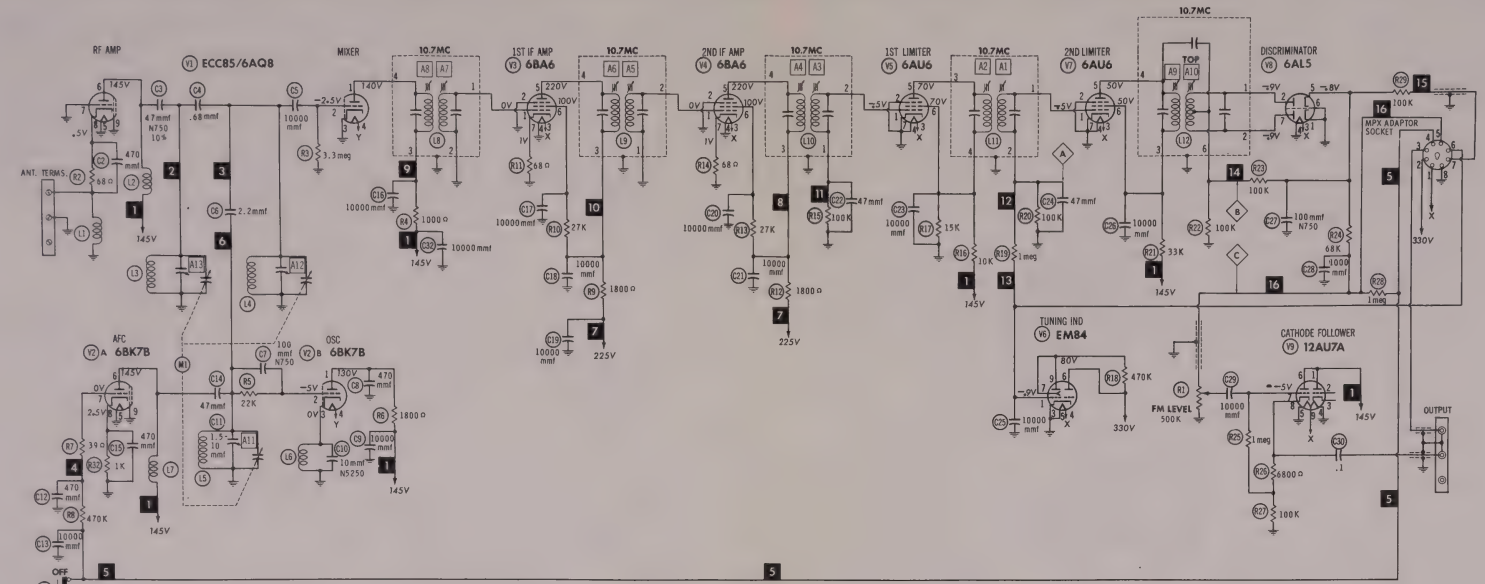
PRINTED BOARD

ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED



1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured with 1000 ohm per volt voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

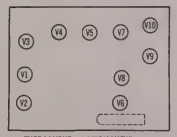
RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	ECC85 6AQ8	†6000Ω	3.3meg	0Ω	FIL	FIL	†5000Ω	0Ω	68Ω	0Ω
V2	6BK7B	†6800Ω	22K	.1Ω	FIL	FIL	†5000Ω	470K ■1.6meg	1000Ω	0Ω
V3	6BA6	.1Ω	0Ω	FIL	FIL	†2800Ω	†30K	68Ω		
V4	6BA6	.1Ω	0Ω	FIL	FIL	†2800Ω	†30K	68Ω		
V5	6AU6	100K	0Ω	FIL	FIL	†12K	†12K	0Ω		
V6	EM84	1.1meg	NC	0Ω	FIL	FIL	†0Ω	†470K	NC	†470K
V7	6AU6	100K	0Ω	FIL	FIL	†38K	†38K	0Ω		
V8	6AL5	0Ω	90K	FIL	FIL	150K	0Ω	90K		
V9	12AU7A	†5000Ω	NC	NC	FIL	FIL	†5000Ω	1.1meg	100K	FIL
V10	6X4	150Ω	NC	FIL	FIL	NC	160Ω	▲25K		

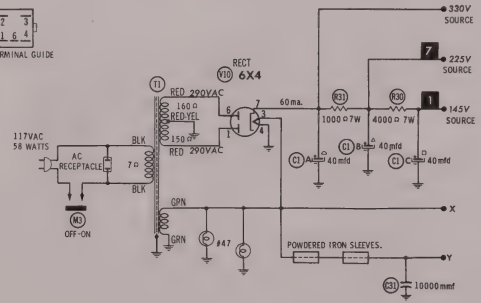
† THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
↑ MEASURED FROM PIN 7 OF V10.
NC NO CONNECTION
■ MEASURED WITH "AFC" ON.
▲ MEASURED FROM CATHODE.

L8 THRU L11 TERMINAL GUIDE

L12 TERMINAL GUIDE



TUBE LAYOUT (BOTTOM VIEW)



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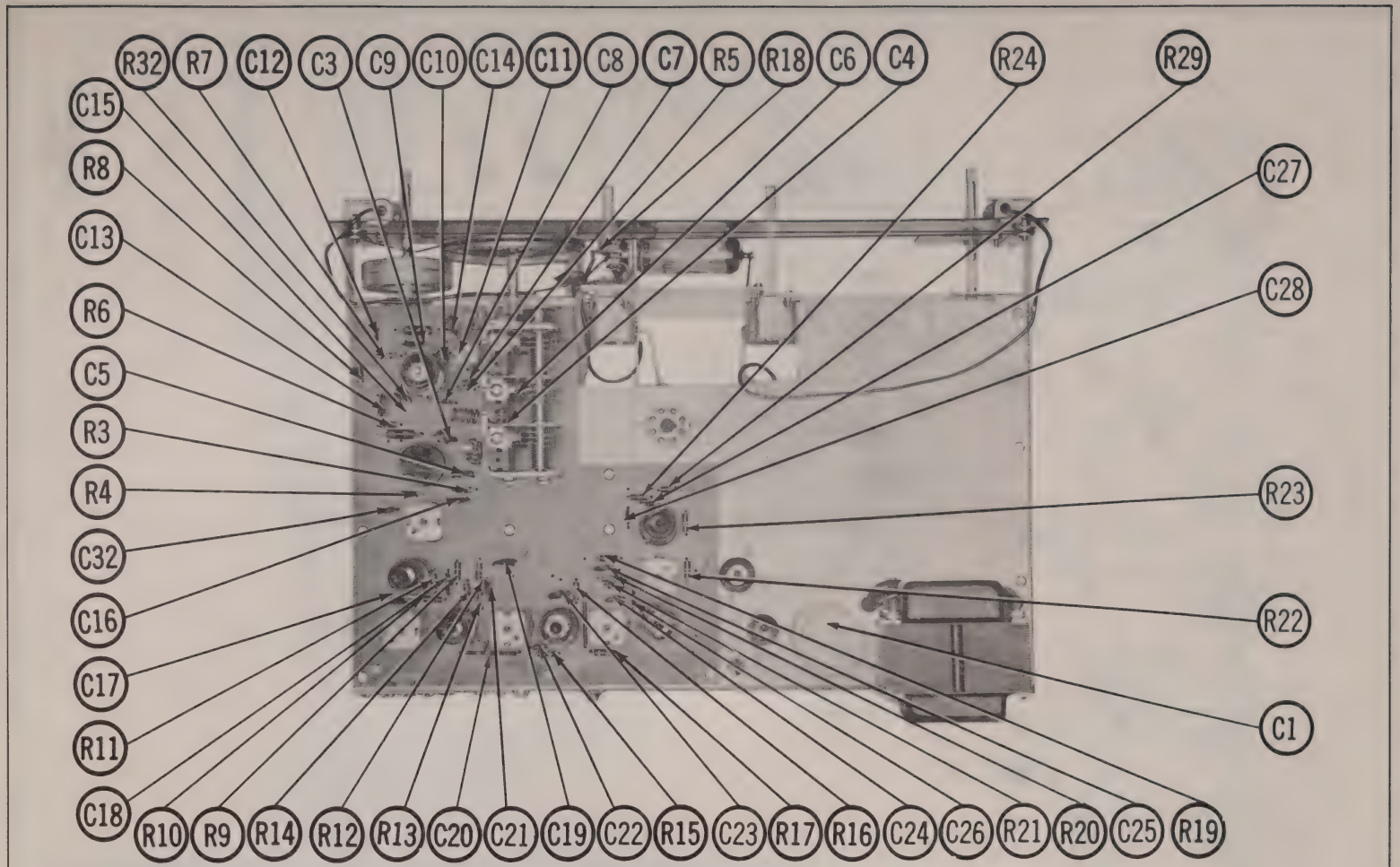
PACO MODEL ST-35W



CHASSIS TOP VIEW-CAPACITOR & RESISTOR IDENT.

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use only enough generator output to provide a usable indication.
Suggested Alignment Tools: A1 thru A10.....GENERAL CEMENT #5097, 8727
WALSCO #2515
A11, A12, A13.....GENERAL CEMENT #5004, 5008, 5009
WALSCO #2520

IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
1.	High side thru .1mfd to RF stator lug of tuning gang. Low side to chassis.	10.7MC (Unmod.)	Point of non-interference.	DC probe to point Ⓐ. Common to chassis.	A1, A2, A3, A4, A5, A6, A7, A8	Adjust for maximum deflection.
2.	"	"	"	DC probe thru 1meg to point Ⓑ. Common to chassis.	A9	"
3.	"	"	"	DC probe to point Ⓒ. Common to chassis.	A10	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60∿ modulation and 450KC sweep. Use 120∿ sawtooth voltage in scope for horizontal deflection.

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
1.	High side thru .1mfd to RF stator lug of tuning gang. Low side to chassis.	10.7MC (450KC Swp)	Point of non-interference.	Vert. amp. to point Ⓐ. Low side to chassis.	A1, A2, A3, A4, A5, A6, A7, A8	Adjust for maximum gain and symmetry of response similar to Fig. 1 with markers as shown.
2.	"	"	"	Vert. amp. thru 47K to point Ⓑ. Low side to chassis.	A9	"
3.	"	"	"	Vert. amp. to point Ⓒ. Low side to chassis.	A10	Adjust to place marker at the center of crossover lines similar to Fig. 2. SLIGHTLY retouch A9 for maximum amplitude and straightness of cross-over lines.

RF ALIGNMENT

AFC "Off".

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
4.	High side thru 270Ω to FM antenna terminal. Low side to chassis.	108MC (Unmod.)	108MC	DC probe to point Ⓐ. Common to chassis.	A11	Adjust for maximum deflection.
5.	"	106MC	106MC	"	A12, A13	"

FIG. 1

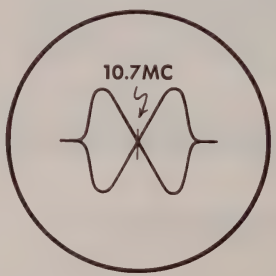


FIG. 2

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	TYPE (GENERAL ELECTRIC • RAYTHEON • SYLVANIA)
V1	RF Amp.-Mixer	ECC85/6AQ8
V2	Osc.-AFC	6BK7B
V3	1st IF Amplifier	6BA6
V4	2nd IF Amplifier	6BA6
V5	1st Limiter	6AU6
V6	Tuning Indicator	EM84
V7	2nd Limiter	6AU6
V8	Discriminator	6AL5
V9	Cathode Follower	12AU7A
V10	Rectifier	6X4

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA PACO PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	▲40	300	P16-265	AFH4-47	C0300	FP327, 89	TMT-3295	TVL-3583	
B	▲40	300							
C	■40	300							

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

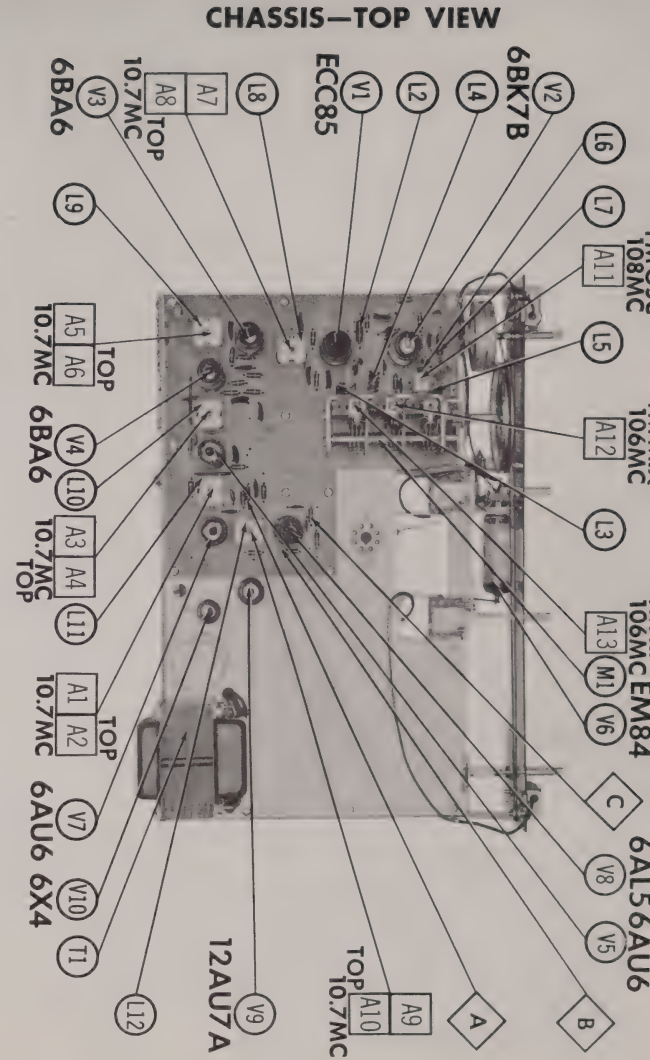
ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C2	470		BPD-00047	DD-471	BYA10T47	CCD-471	B-347	10TS-T47
C3	47 N750 10%		N750-DI 47	DTN-47	C10Q47U	CCTN-470	CN7-447	10TCU-Q47
C4	.68		NPO-SI .68	TCZ-R68				
C5	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C6	2.2		NPO-SI 2.2	TCZ-2R2	C10V22C	CCTO-2R2	CNO-522	10TCC-V22
C7	100 N750		N750-DI 100	DTN-100	C10T1U	CCTN-101	CN7-310	10TCU-T10
C8	470		BPD-00047	DD-471	BYA10T47	CCD-471	B-347	10TS-T47
C9	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C10	10 N5250	#P16-268				*		
C11	1.5-10	#P16-264		829-10				
C12	470		BPD-00047	DD-471	BYA10T47	CCD-471	B-347	10TS-T47
C13	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C14	47		DI-47	DD-470	L10Q47	CCD-470	GP447	10TS-Q47
C15	470		BPD-00047	DD-471	BYA10T47	CCD-471	B-347	10TS-T47
C16	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C17	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C18	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C19	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C20	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C21	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C22	47		DI-47	DD-470	L10Q47	CCD-470	GP447	10TS-Q47
C23	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C24	47		DI-47	DD-470	L10Q47	CCD-470	GP447	10TS-Q47
C25	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C26	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C27	100 N750		N750-DI 100	DTN-100	C10T1U	CCTN-101	CN7-310	10TCU-T10
C28	1000		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C29	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C30	.1 200V		P288N-1	DF-104	CUB2P1	2DP-3-104	GEM-201	2TM-P10
C31	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C32	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.
\# Paco Part Number.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA PACO PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	500K	½	P17-182A	AB-60	A47-500K-Z	Q13-133	U48	FM Level
B	Shaft			AK-1	FKS-1/4	Not Req.	Not Req.	

CHASSIS—TOP VIEW



PACO MODEL ST-35W

FOLDER 11

PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN TV PART No.	REMARKS
R2	68Ω			
R3	3.3meg			
R4	1000Ω			
R5	22K			
R6	1800Ω			
R7	39Ω			
R8	470K			
R9	1800Ω			
R10	27K			
R11	68Ω			
R12	1800Ω			
R13	27K			
R14	68Ω			
R15	100K			
R16	10K			
R17	15K			

ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN TV PART No.	REMARKS
R18	470K			
R19	1meg			
R20	100K			
R21	33K			
R22	100K			
R23	100K			
R24	68K			
R25	1meg			
R26	6800Ω			
R27	100K			
R28	1meg			
R29	100K			
R30	4000Ω 7W	PW7-4000	10W-SQ-4000	
R31	1000Ω 7W	PW7-1000	10W-SQ-1000	
R32	1000Ω			

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		PACO PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	Workman TV PART No.	
L1	RF Choke(1uh)	P18-195	BC-561	4602	RTC-8515	T855	
L2	RF Choke(3.3uh)	P18-196	BC-564	4608	RTC-8518	T858	
L3	RF	P18-192					
L4	Mixer	P18-192					
L5	Osc.	P18-191					
L6	RF Choke(1uh)	P18-195	BC-561	4602	RTC-8515	T855	
L7	RF Choke(3.3uh)	P18-196	BC-564	4608	RTC-8518	T858	
L8	1st IF	P18-200	FM-256	1463-PC	RTC-9046	T654	
L9	2nd IF	P18-200-1	FM-256	1463-PC	RTC-9046	T654	
L10	3rd IF	P18-200-2	FM-256	1463-PC	RTC-9046	T654	
L11	4th IF	P18-200-3	FM-256	1463-PC	RTC-9046	T654	
L12	Discriminator	P18-201					

TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA					NOTES
	PRI.	SEC. 1	SEC. 2	PACO PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	117VAC @ .55A	580VCT @ .060A DC	6.3V @ 4A	P18-190					

MISCELLANEOUS

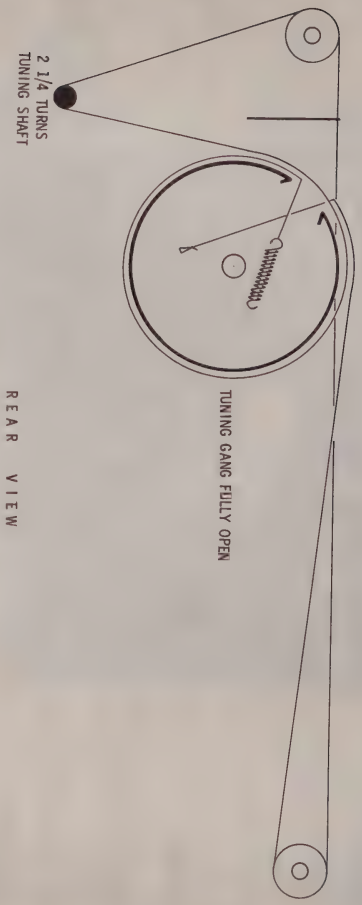
ITEM No.	PART NAME	PACO PART No.	NOTES
M1	Tuning Cap.	P16-262	FM, 3 Gang
M2	Switch	P14-259	AFC (Pushbutton Type)
M3	Switch	P14-260	Power Off-On (Pushbutton Type)

WIRING DATA

General-use Unshielded Hook-up Wire ..... A ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

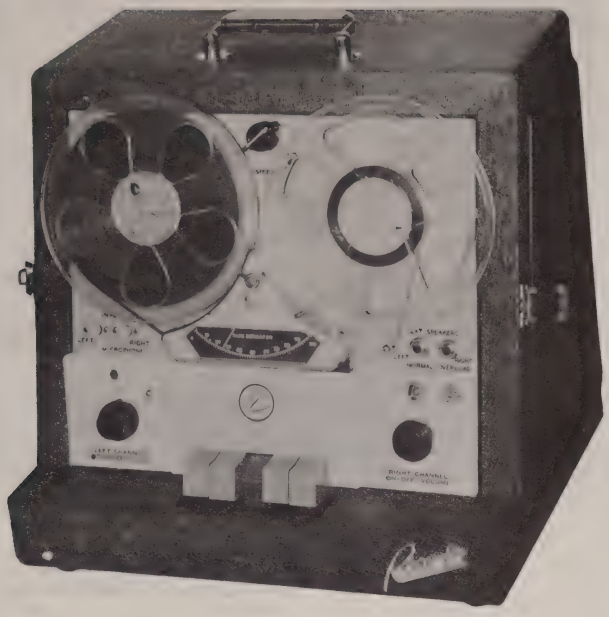
Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)

DIAL CORD STRINGING



PHOTOFACT® Folder

RECORDIO
MODEL 892



RECORDIO
MODEL 892

GENERAL INFORMATION

Recordio Model 892 tape recorder features pushbutton operation of Fast Forward, Playback, Stop, Record, and Fast Reverse. A Tape Timer enables you to locate a desired section of a recording quickly.

Dual-Track, Dual-Speed monaural recordings can be made; quarter-track and stereophonic tapes can be played back.

Any reel size up to 7" can be used. Two neon recording indicators are provided to simplify the recording level setting.

New Monaural recordings can be made on previously recorded tape since the erase head is automatically positioned when the record button is depressed. Monaural recordings can be made from a radio, television receiver, or phonograph in addition to those made directly from the microphone.

Stereophonic records can be played through the Model 892 by connecting the turntable output cables into the left and right input jacks.

The two tape speeds are 3 3/4 and 7 1/2 ips. Using both tracks of the tape, the recording time is as follows:

Size	3 3/4 Speed	7 1/2 Speed
5" (600 ft.) reel	1 hour	1/2 hour
7" (1200 ft.) reel	2 hours	1 hour

This recorder is to be operated on 60 cycles, 115 volts AC supply only.

Manufactured By:

Recordio Corporation
Charlotte, Michigan

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of CQ470

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SET 544 FOLDER 12

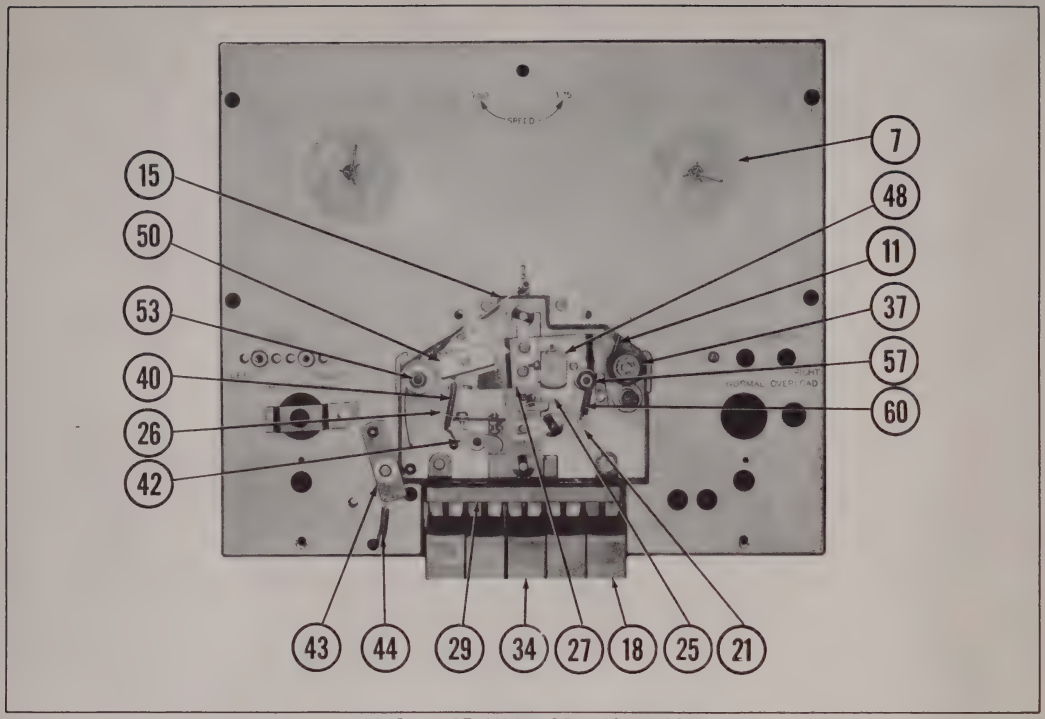


FIG.1 TOP VIEW OF MECHANISM

PREPARING FOR OPERATION

1. Place the recorder on a flat surface.
2. Remove the AC cord from its compartment on the rear of the unit.
3. Remove the lid.
4. Remove the accessories from their compartment in the lid.
5. Depress the Stop button.
6. Plug the AC cord into a convenient outlet of proper rating.
7. Set the speed change knob to the desired speed.

FUNCTION OF CONTROLS

Fast Reverse

Depress this button to rewind the tape onto the supply reel.

Record

After pushing the record lock down, depress this button to place the recorder in the record mode.

Stop

Depressing this button stops the recorder when in any mode of operation.

Play

Depressing the Play button places the recorder in the playback mode of operation.

Forward

This control advances the tape at a rapid speed to any desired section of the tape.

Record Lock

This is a safety lock to prevent the operator from depressing the record button and erasing a tape accidentally.

Speed Selector

Turning this control in a clockwise direction places the recorder in the 7 1/2 ips speed. Turning it in a counterclockwise direction places the recorder in the 3 3/4 ips speed.

Threading Tape

1. Place a reel of tape on the left (supply) spindle.
2. Unwind about 14" of tape from the supply reel and insert the tape into the tape slot with the dull side facing the record-play head.
3. Insert the free end of the tape into one of the three slots in the takeup reel and turn the reel a few complete turns to secure the tape to the reel and to take all slack up between reels.

Microphone Recording

1. Turn the right channel On-Off-Volume control to the right until a click is heard.
2. Insert the microphone plug into the Microphone input.
3. Move the record lock (43) downward with the left hand. This releases the safety lock which prevents accidental erasure.
4. Depress the Record button, while holding the record lock (43) with the left hand, until it latches.
5. Adjust the volume control until the normal level indicator just flashes while talking into the microphone. When the volume control is advanced too far, the overload indicator will flash and the recording will be distorted. Lower the volume control to a point where the overload indicator does not flash to prevent overload.

NOTE: The tone control does not operate during recording.

Speed Change Knob

The arrow on the knob should point to 7.50 or 3.75, according to the speed desired.

CAUTION: Do not operate the speed change knob while the unit is running. The stop button must be depressed first before changing speeds.

Recording from Radio, Television, or Phonograph

1. To record from a phonograph, make up an adaptor plug with a phono socket on the other end. Insert the adaptor plug into the microphone input jack. Insert the phono plug into the phono socket on adaptor plug.
2. To record from a radio or television receiver, make up a patch cord with alligator clips on one end and a phono plug on the other end. Connect the alligator clips across the voice coil of the speaker. and plug the other end into the microphone input jack.
3. Proceed as in Microphone Recording.

To Use Second Track

1. When all of the tape has been wound onto the takeup reel, depress the stop button.
2. Remove the takeup reel from the right takeup spindle, and replace it with the empty reel.
3. Place the full reel of tape on the left supply spindle.
4. Thread the tape.
5. Proceed with the recording.

Playing Recordings

1. Turn the unit on with the right channel On-Off-Volume Control knob.
2. Thread the Tape, see "Threading Tape".
3. Set the speed change knob (1) to the speed at which the recording was made.
4. Depress the Play button.
5. On monaural recordings, adjust the left channel volume control to the desired listening level.
6. On stereo recordings, adjust the left-and right-channel volume controls so the sound output is equal.
7. Adjust the tone control to the desired listening level.

Fast Forward or Reverse

When a certain portion of the tape is to be played over again it is not necessary to rewind the entire tape. The tape will advance or reverse at a rapid speed to the desired place by depressing the forward or reverse button.

Tape Timer

If you wish to play back a certain recording, note the reading on the timer scale when the recording is being made or heard. Rewind or advance the tape to the number on the scale and then depress the stop button. Depress the play button and the desired recording will be played back.

When starting a new reel of tape, reset the timer pointer to "O" by rotating the reset knob. By starting at "O" on all tapes, the number location can be catalogued for each recording on any reel.

Erasing Recorded Material

The erase head is automatically positioned when the record button is depressed, erasing any previous recording before a new one is made. Tapes may be erased without putting new material on them by depressing the record button and turning the volume control to its minimum position. One track is erased at a time. To erase the second track, reverse the reels and repeat the above operation.

To Use Recorder as a Public Address System

Plug the microphone into the microphone input jack. Turn the On-Off-Volume control knob to the On position. Depress the Record button and talk into the microphone.

CAUTION: When using as a public address system, keep the microphone away from the loudspeakers as far as possible to prevent feedback.

To Edit and Splice Tape

NOTE: Since it is impossible to edit and splice one track without affecting the other, recordings which are to be edited should be limited to one track only.

1. Tape may be edited by cutting out unwanted portions or by joining selections into another sequence. Announcements may be inserted between selections, etc. Unused sections can be spliced together for re-use.
2. For best results, cut the tape at a slight diagonal, join ends together with splicing tape on the glossy side and trim off any excessive width.

To Play Stereophonic Records

1. Insert the two turntable output leads into the left and right input jacks on the recorder.
2. Make certain the stop button is depressed.
3. Turn the right hand knob to the On position.
4. Start the turntable and adjust the left and right channels until the sound output is equal.

DISASSEMBLY

Removing the Recorder from the Case

1. Remove the ventilation panel from the rear of the case.
2. Unplug the speaker wires on the back of the case.
3. Remove the control knobs.
4. Remove the front escutcheon (10) and rear escutcheon (6).
5. Remove the hex head screws at the bottom of the tape deck.
6. Remove the screws on each side of the tape deck.
7. Slide recorder out of case.
8. To reassemble, reverse the foregoing procedure.

To Remove Amplifier from Tape Transport

1. Remove the left and right external speaker jacks from the tape transport mechanism.
2. Unplug the interconnecting plug.
3. Remove the microphone jack from the tape transport mechanism.
4. Unsolder the leads from the left and right input jacks.
5. Unplug the head leads.
6. Disconnect the record switch actuating link.
7. Remove four screws, two on each side, and lift amplifier from the tape transport mechanism.
8. Reverse the foregoing procedure to reassemble.

ADJUSTMENTS

Record-Play Head

1. Remove the rear escutcheon (6) and the front escutcheon(10).
2. Thread an alignment tape or a good prerecorded tape on the recorder.
3. Adjust the controls as described under "Playing Recordings".
4. Adjust screw (48A) to the right or left until the maximum high frequencies are obtained.

Pressure Pad

1. Remove front escutcheon (10).
2. Depress the Play button but do not turn recorder on.
3. Use a pencil type postal scale at the end of the pad and check the amount of pressure necessary to pull the pad away from the tape. The required pressure should be 1 3/4 oz. $\pm$ 1/4 oz.
   (a) Adjust the record head pressure pad with the locked adjustment screw (41).
   (b) Adjust the guide post pressure pad by bending the pressure pad spring. It must be adjusted for minimum pressure against the tape.
4. Depress the stop button after the adjustments are made.

Erase Head

1. Remove the rear escutcheon and check to see if the erase head (50) is parallel with the tape.
2. Check to see if the top edge of the tape coincides with the top end of the diagonal slot (junction of long diagonal slot and short vertical slot).
3. To adjust the tape level, loosen set screw (56) and rotate the tape guide post (57) up or down. Tighten set screw (56).

Brake Shoe

1. The brake shoes on brake spring (81) should clear the drums by approximately 1/8" with the pushbuttons in the up position.

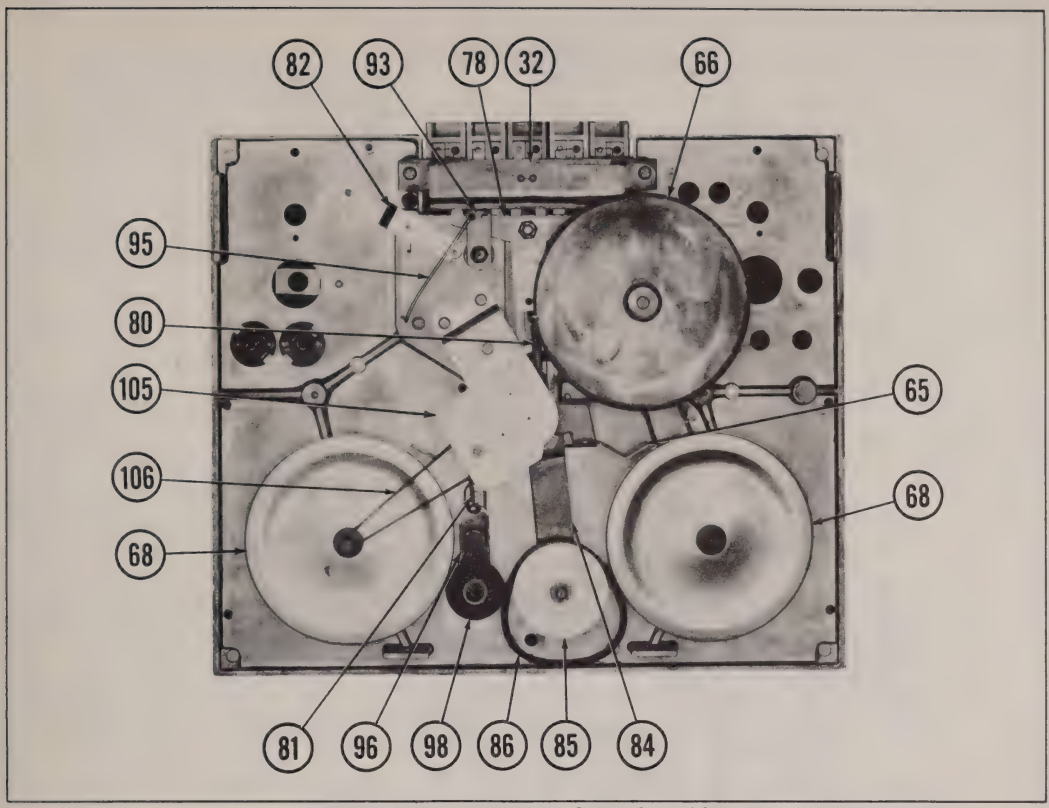


FIG.2 BOTTOM VIEW OF MECHANISM

2. Depress the stop button and observe the brake shoes. They must contact the drums at the same time and with equal pressure.

3. To adjust the brake shoes, bend the brake slide plate assembly (64).

CLEANING

Foreign matter should be cleaned from under the plastic pushbuttons occasionally. The pressure roller (37), recording head (48), and tape guide posts (53) and (57), should be cleaned occasionally with a soft cloth and alcohol to remove the tape residue from them.

LUBRICATION

All rotating parts are provided with oilite bearings and are lubricated before leaving the factory. If the recorder is disassembled for repair, clean all sliding levers and lubricate with a drop of good grade motor oil.

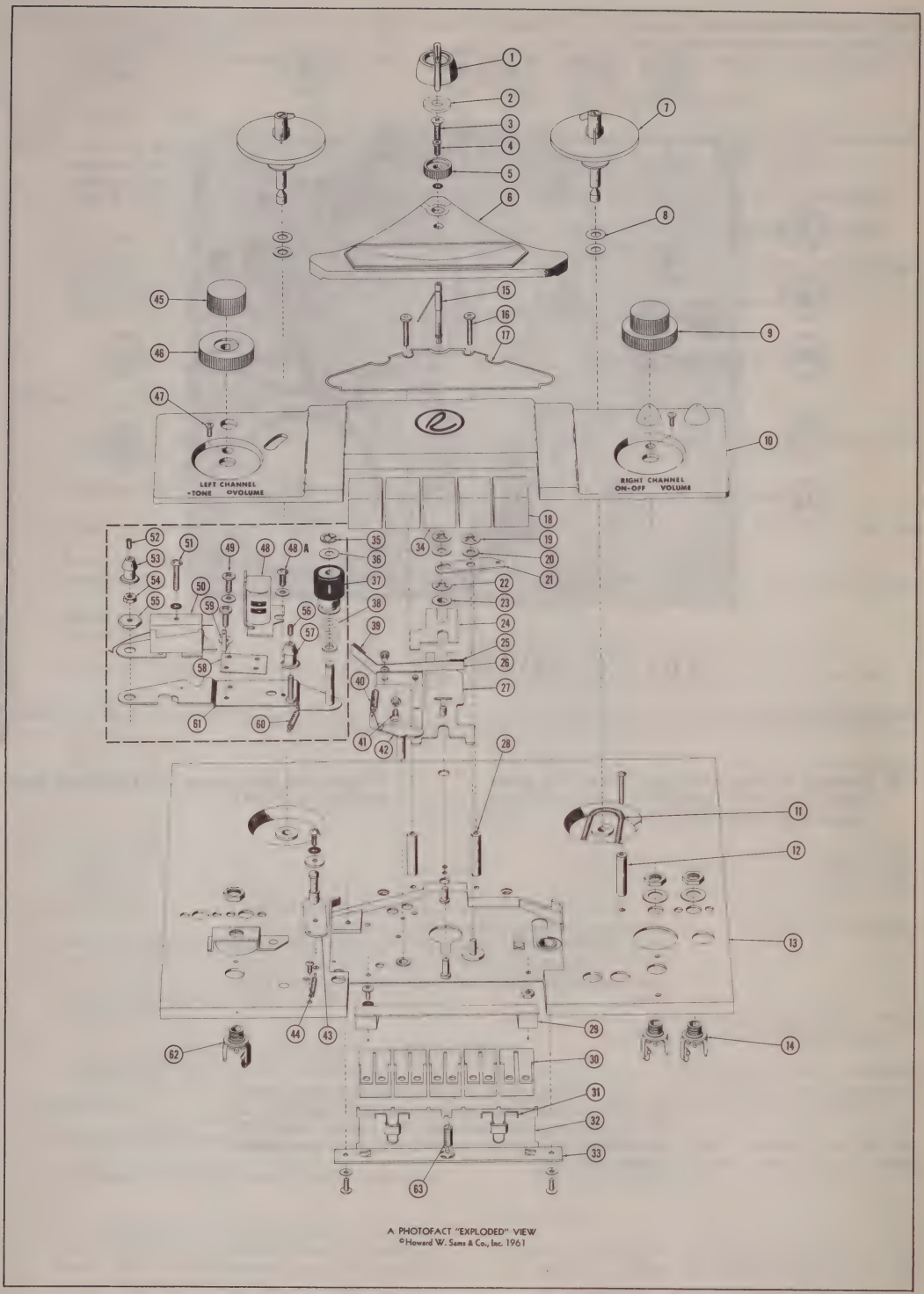


FIG.3A EXPLODED VIEW OF PARTS

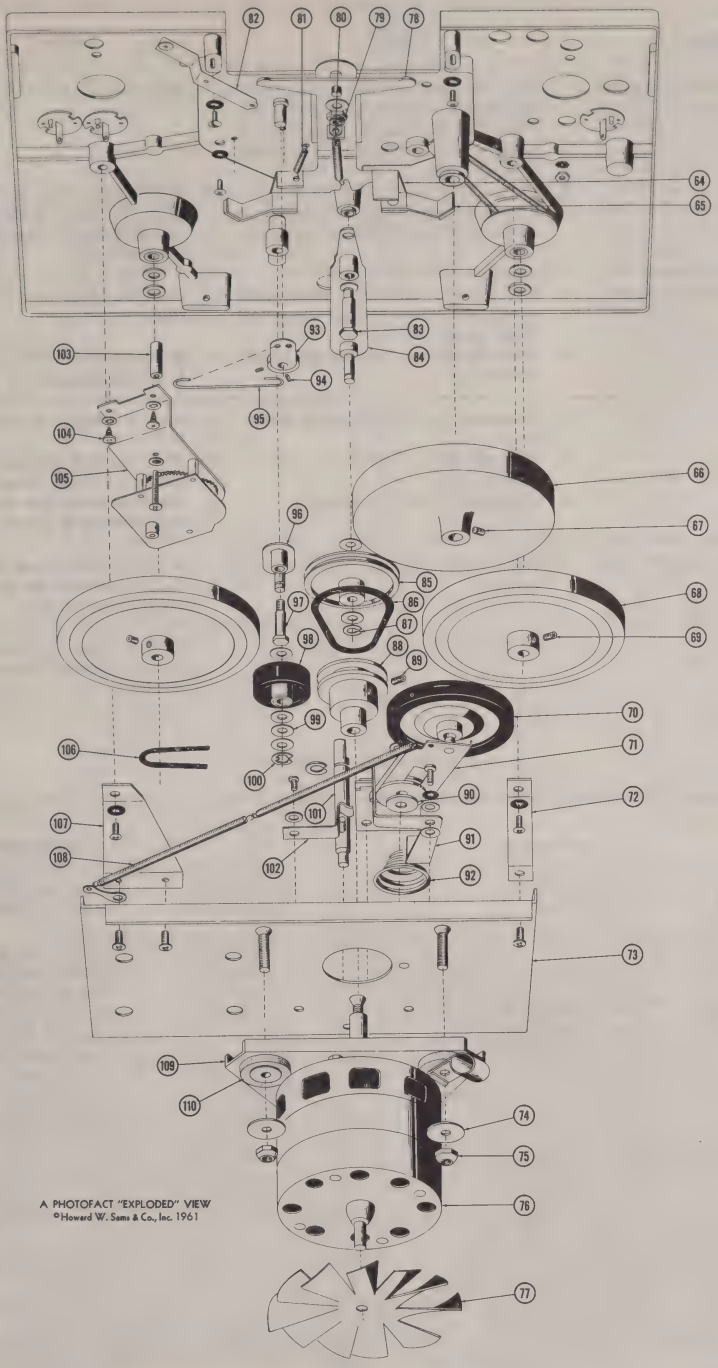


FIG. 3 B EXPLODED VIEW OF PARTS

TROUBLE CHART

Symptom	Cause	Remedy
No drive in record or playback.	1. Idler tension spring (108) loose or broken and not holding the idler wheel (70) in engagement with the motor pulley (88) and flywheel (66).	1. Replace idler tension spring (108).
	2. Idler slide plate (71) binding on slide bushing (90) preventing idler wheel (70) from sliding forward.	2. Check for burrs on the idler slide plate (71) and slide bushing (90). Check to see if the idler slide plate (71) is bent.
No fast forward or reverse.	1. Idler lever tension spring (80) loose or broken and not actuating idler lever (84).	1. Replace idler lever tension spring (80).
	2. Idler drive belt (86) not properly connected.	2. Make sure the idler drive belt (86) is in the grooves of the pulleys.
No record.	1. Pressure pad not adjusted properly.	1. See "Pressure Pad Adjustment".
	2. Record head (48) loose on its mounting.	2. Tighten and adjust as described under "Record-Play Head".
	3. Tape not threaded properly.	3. Make certain the dull side of the tape faces the head.
Pushbuttons fail to latch into position.	1. Lock plate spring (63) loose or broken.	1. Replace lock plate spring (63) so lock plate will be held against the hinge bracket (32).
Does not erase.	1. Spring (40) loose or broken.	1. Replace spring (40) so the erase head is pulled forward to engage the tape.

MECHANICAL PARTS LIST

Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
1	C-13.253-7	Speed Shift Knob	26	B-19.892	Pressure Pad Spring
2	73-2254-3	Felt Washer	27	C-19.839-1	Playback Slide Plate Ass'y.
3	57-4C-624-5	#6-32 x 1½" O.H.M.S. Phillips	28	B-33.446	Spacer
			29	B-19.858	Pushbutton Retainer Bracket
4	57-4C-505-7	#4-40 x 5/16" O.H.M.S. Phillips	30	B-19.876	Pushbutton Lever
			31	B-31.337	Pushbutton Return Spring
5	B-32.302-2	Timer Knob	32	B-19.859	Hinge Brkt. for Pushbutton
6	D-13.292-2	Rear Escutcheon	33	B-19.870	Locking Plate for Pushbutton
7	C-13.318-1	Reel Pan and Shaft Ass'y.	34	B-35.1180-3	Stop Pushbutton - Red
8	73-2340	Linen Washer	35	B-33.418-2	"C" Washer
9	C-13.422-1	On-Off-Volume Knob	36	B-28.163	Linen Washer
10	E-13.295-10	Front Escutcheon	37*	B-33.404	*Pressure Roller
11	B-31.351	Reel Drive Spring	38	B-28.163	Linen Washer
12	B-32.282	Right Tape Guide	39	B-31.334	Pressure Pad
13	D-35.1262-3	Base Plate Ass'y.	40	B-31.361	Erase Head Tension Spring
14		Midget Jack	41	57-16C-606-1	#6-32 x 3/8 R.H.M.S.
15	B-35.851-1	Timer Shaft & Pointer Ass'y.	42	B-35.766-1	Record Actuating Lever Ass'y.
16	57-1C-618-1	#6-32 x 1 1/8" Phillips R.H.M.S.	43	B-35.775-1	Record Interlock Lever & Handle
17	B-19.975-2	Rear Escutcheon Plate	44		Record Interlock Lever Spring
18	B-35.1180-1	Pushbutton Ass'y. (Gray)	45	C-13.417-1	Tone Control Knob
19	B-33.412	Push-On Stud Nut	46	C-13.416-1	Volume Control Knob
20	73-2241-148F	Flat Washer	47		#8-32 x 3/8 R.H.M.S. Phillips
21	B-19.881	Playback Actuating Lever	48	B-36.254	Play-Record Head
22	B-33.412	Push-On Stud Nut	49		Head Mtg. Plate Screw
23	73-2241-148F	Flat Washer			
24	B-19.868	Record Slide Plate			
25	B-31.334	Pressure Pad			

Ref. No.	Part No.	Description
50	C-35.756-1	Erase Head
51	57-16B-613-0	#6-32 x 13/16 R.H.M.S. Screw
52	57-3439-0	#6-32 x 3/16 Bristol Head Set Screw
53	B-32.300	Tape Guide Post (Left)
54	48-410-1	#6-32 Nut, Steel
55	B-32.336	Tape Guide Post Spacer
56	57-3439-0	#6-32 x 3/16 Bristol Head Set Screw
57	B-32.282	Tape Guide Post (Right)
58	B-19.989	Head Mounting Plate
59	B-33.325-1	Lug
60	B-31.360	Pressure Roller Tension Spring
61	B-35.1278-1	Pressure Roller Plate Ass'y.
62		Mic Input Jack
63	B-31.343	Lock Plate Spring
64	C-35.835-1	Brake Slide Plate Ass'y.
65	B-31.335	Brake Pad, Felt
66	13.257-1	Flywheel
67	57-3698-0	#8-32 x 3/16 Bristol Head Set Screw
68	C-35.823-1	Brake Drum & Bushing Ass'y.
69	57-3698-0	#8-32 x 3/16 Bristol Head Set Screw
70*	B-33.408	* Rubber Bonded Idler Wheel
71	B-19.873	Idler Slide Plate
72	B-19.862	Angle Bracket
73	D-35.1054-2	Drive Mounting Plate Ass'y.
74	B-33.411	Flat Washer 3/4 O.D. x .195 I.D. x .050
75	48-2221	#10-32 Elastic Stop Nut
76	D-36.153	Motor, Round Type (Fasco)
77		Fan
78	B-35.1046-1	Shift Plate Ass'y.
79		Hex Nut
80	B-31.339	Idler Lever Tension Spring
81	B-31.338	Brake Return Spring
82	B-35.774-1	Record Interlock
83	B-32.275	#8-32 Shoulder Screw
84	B-35.1051-1	Idler Lever Ass'y.
85		Idler Drive Sheave
86	B-28.181	Idler Drive Belt
87	B-33-418-2	"E" Ring
88	B-32.288	Motor Pulley
89	57-3698-0	8-32 x 3/16 Bristol Head Set Screw
90	B-32.272	Idler Slide Bushing
91	B-19.1431-1	Idler Throw-Out Lever
92	B-31.327	Idler Lift Compressing Spring
93		Switch Lever
94		Set Screw
95	B-31.333	Switch Arm Link
96	B-19.873	Sub-Idler Plate
97	B-32.275	#8-32 H.H. Shoulder Screw
98	B-33.405	Sub-Idler Wheel
99	73-2254-6	Felt Washer
100	B-33.418-2	"E" Ring
101	B-32.293	Speed Control Shaft
102	B-19.961	Speed Control Shaft Detent Spring
103	B-33.118	Spacer
104	57-1C-603-2	6-32 x 3/16 B.H.M.S.
105	D-33.445	Gear Train
106	B-28.175	Counter Belt
107	57-6C-806-1	#8-32 x 3/16 R.H.M.S.
108	B-31.324	Idler Tension Spring
109	D-35.1054-2	Drive Mtg. Plate Ass'y.
110	B-28.194-2	Shock Mount

* Pressure Roller WALSCO Part No. 1457.
* Rubber Bonded Idler Wheel WALSCO Part No. 1430.

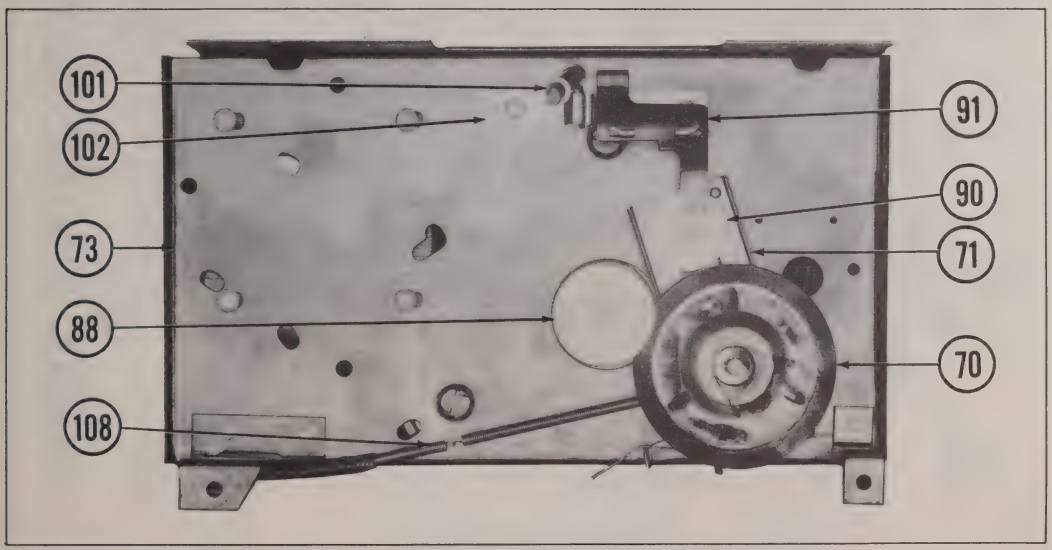
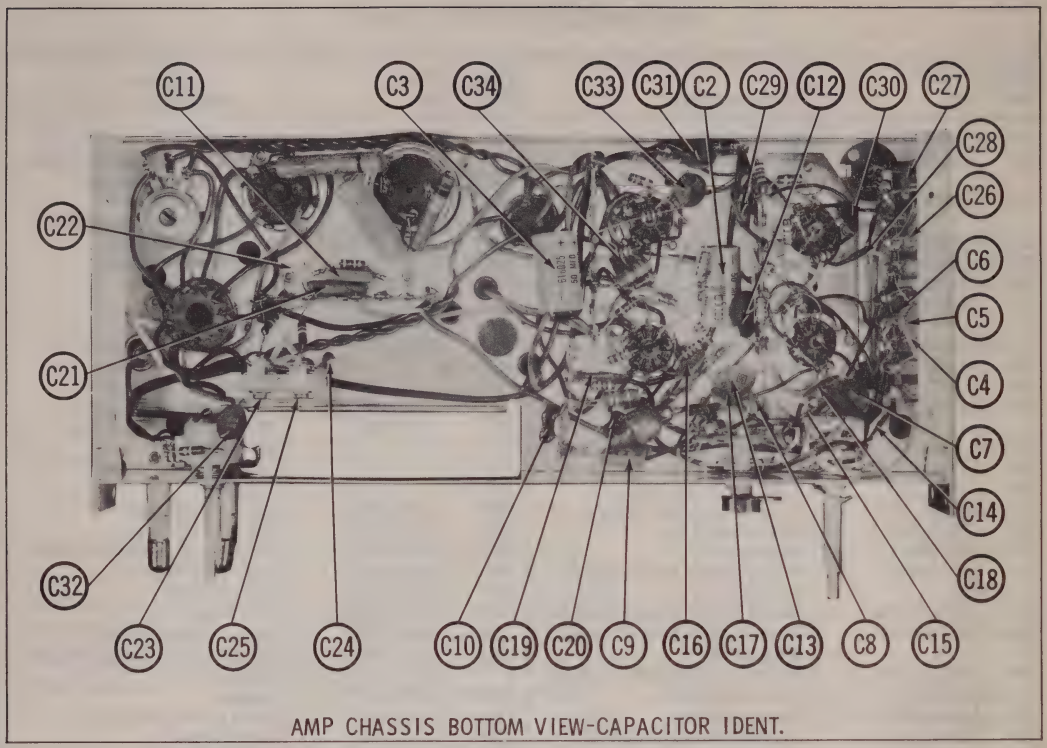
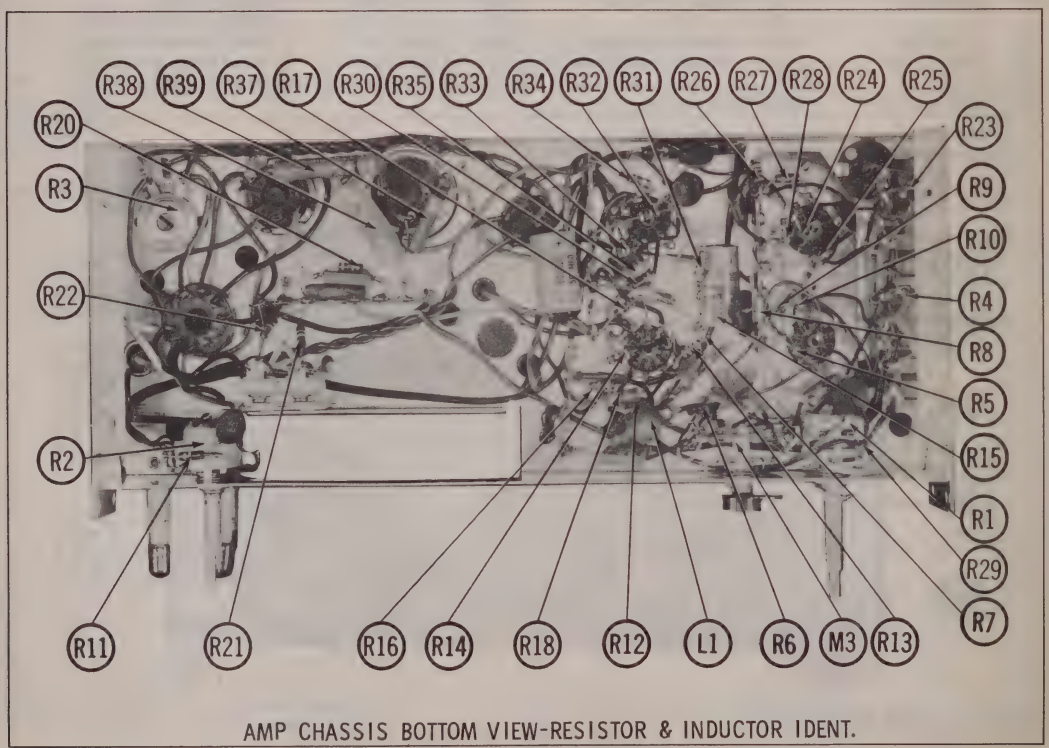


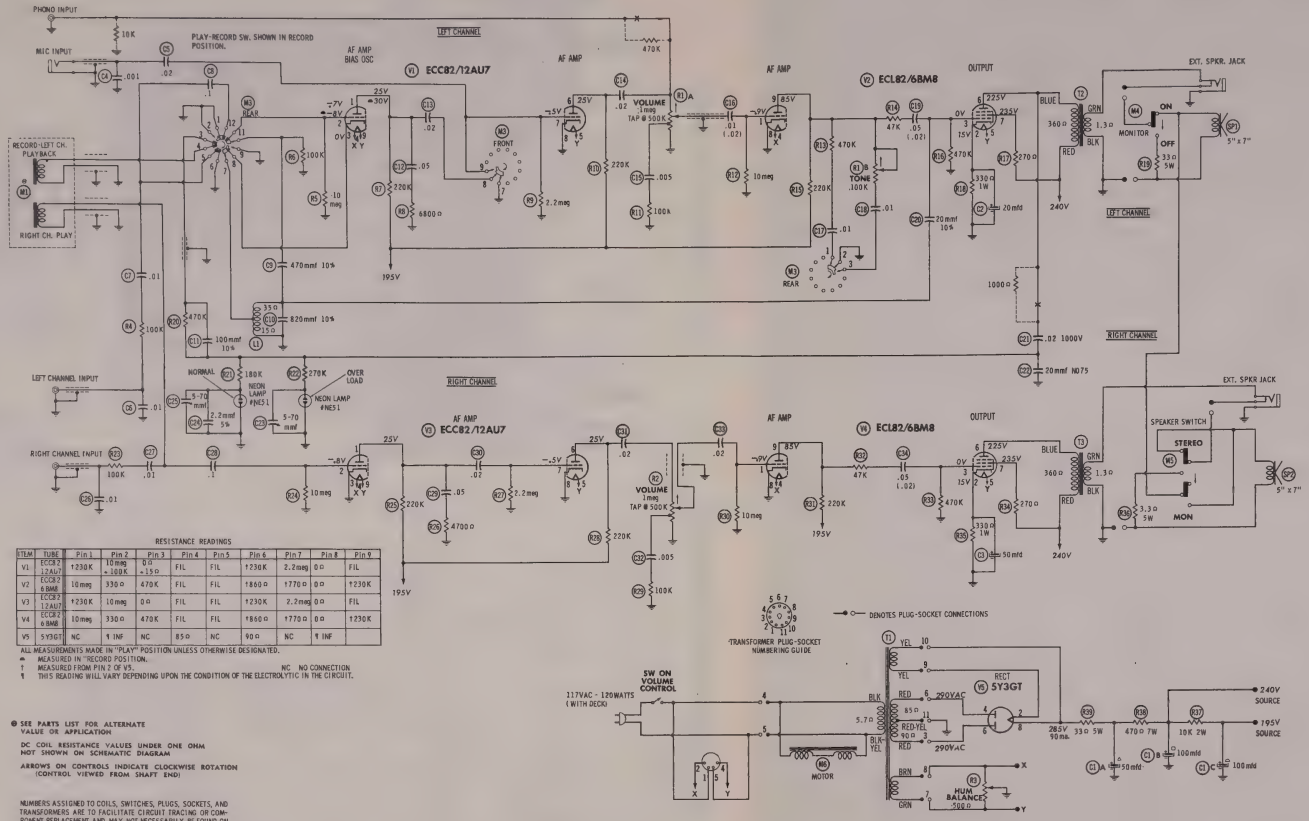
FIG.4 DRIVE MOUNTING PLATE ASSEMBLY



AMP CHASSIS BOTTOM VIEW-CAPACITOR IDENT.



AMP CHASSIS BOTTOM VIEW-RESISTOR & INDUCTOR IDENT.



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	ECC82 12AU7	†230K	10 meg +100K	0 Ω +15 Ω	FIL	FIL	†230K	2.2meg	0 Ω	FIL
V2	ECC82 6BM8	10meg	330 Ω	470K	FIL	FIL	†860 Ω	†770 Ω	0 Ω	†230K
V3	ECC82 12AU7	†230K	10 meg	0 Ω	FIL	FIL	†230K	2.2meg	0 Ω	FIL
V4	ECC82 6BM8	10meg	330 Ω	470K	FIL	FIL	†860 Ω	†770 Ω	0 Ω	†230K
V5	5Y3GT	NC	¶ INF	NC	85 Ω	NC	90 Ω	NC	¶ INF	

ALL MEASUREMENTS MADE IN "PLAY" POSITION UNLESS OTHERWISE DESIGNATED.
= MEASURED IN "RECORD" POSITION.
† MEASURED FROM PIN 2 OF V5. NC NO CONNECTION
¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.

● SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured with 1000 ohm per volt voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ±15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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RECORDIO MODEL 892

AMP PARTS LIST AND DESCRIPTIONS

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord	Use BELDEN No. 1765-B (6 Ft. Length) 1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting)	Use BELDEN No. 8401
Phono Pick-up Arm Cable	Use BELDEN No. 8430 (Two Conductor - Twisted)

TUBES

◆ GENERAL ELECTRIC ◆ RAYTHEON ◆ SYLVANIA ◆

ITEM No.	USE	TYPE
V1	Left Channel AF Amp. - Bias Oscillator	ECC82/12AU7
V2	Left Channel AF Amp. - Left Channel Output	ECL82/6BM8
V3	Right Channel AF Amp.	ECC82/12AU7
V4	Right Channel AF Amp. - Right Channel Output	ECL82/6BM8
V5	Rectifier	5Y3GT

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA RECORDIO PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	▲50	300	C-5.421-11		B0331	FP227.5	TMD-2410	TVL-2637	
B	■100	300			BRI0035	TC69	TD-100-450	TVA-1718	
C	▲100	300							
C2	50	25	B-5.464.2	PRS1265	BBR50-25	TC29	TD-50-25	TVA-1206	
C3	50	25	B-5.464.2	PRS1265	BBR50-25	TC29	TD-50-25	TVA-1206	

FIXED CAPACITORS

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C4	.001		SI 1000	D6-102	BYA10D1	CCD-102	B-210	5HK-D10
C5	.02		BPD-02	DD-203	BYA10S2	CCD-203	B-120	5HK-S20
C6	.01		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C7	.01		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C8	.1 10V			UK10-104	H-05P1		TA-010	TG-P10
C9	470 10%		1469-00047		5R5T47	CM-19B-471K	MCJ244	MS-347
C10	820 10%		1469-00082		5R5T82	CM-19B-820K	MCE251	MS-382
C11	100 10%		1469-0001	TCZ-100	22R5T1	CM-19B-101K	MCB235	MS-31
C12	.05		BPD-05	DD-503	CUB6S5	6DP33-503	GP150	5HK-S50
C13	.02		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C14	.02		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C15	.005		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C16	.01	(.02) †	BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C17	.01		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C18	.01		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C19	.05	(.02) †	BPD-05	DD-503	CUB6S5	6DP-3-503	GP150	5HK-S50
C20	20 10%		1469-00002	TCZ-20	22R5Q2	CM-19B-200K	CNO-422	MS-42
C21	.02 1000V		BPD-02		CUB10S2	16DP-4-203	UAC-120	10TM-S20
C22	20 N075	#C-4.109-34				"		
C23	5-70	#B-4.145				462		
C24	2.2 5%		NPO-SI 2.2	TCZ-2R2	C10V22C	CCTO-2R2	CNO-522	10TCC-V22
C25	5-70	#B-4.145				462		
C26	.01		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C27	.01		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C28	.1 10V			UK10-104	H-05P1		TA-010	TG-P10
C29	.05		BPD-05	DD-503	CUB6S5	6DP-3-503	GP150	5HK-S50
C30	.02		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C31	.02		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C32	.005		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C33	.02		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C34	.05	(.02) †	BPD-05	DD-503	CUB6S5	6DP-3-503	GP150	5HK-S50

† Alternate Value.
# Recordio Part Number.
* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

AMP PARTS LIST AND DESCRIPTIONS (Continued)

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA RECORDIO PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	1meg	½	B-11,291-2	F1-56		† QJ-1546R	■ UE4233	Volume, Left Channel
	500K Tap							
B	100K	½		R2-31				Tone, Left Channel
R2A	1meg	½	B-8,227-2	BT-74	A47F5-1meg	Q19-137X	UT-443	Volume, Right Channel
	500K Tap							
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
C	Switch			KR-1	SWE-12	76-1	US-26	Power Off-On
R3A	500Ω	½	B-8,240	TT-4	B47-500-S	B11-103	PTA52L	Hum Balance
B	Shaft			Not Req.	Not Req.	TM4	Not Req.	

† "CONCENTRIKIT" Equivalent: K-15 Kit with Base Elements and Shafts: B19-137X, P17-115 (Panel) (Not available as a factory assembled unit). B11-128, R1-126 (Rear)

■ "STA-LOC" Equivalent: FB16T55, RU15L, OF1500, IS1875

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA IRC PART No.	WORKMAN TV PART No.	REMARKS
R4	100K			
R5	10meg			
R6	100K			
R7	220K			
R8	6800Ω			
R9	2.2meg			
R10	220K			
R11	100K			
R12	10meg			
R13	470K			
R14	47K			
R15	220K			
R16	470K			
R17	270Ω			
R18	330Ω 1W			
R19	3.3Ω 5W	PW5-3.3	5W-SQ-3.3	
R20	470K			
R21	180K			

ITEM No.	RATING	REPLACEMENT DATA IRC PART No.	WORKMAN TV PART No.	REMARKS
R22	270K			
R23	100K			
R24	10meg			
R25	220K			
R26	4700Ω			
R27	2.2meg			
R28	220K			
R29	100K			
R30	10meg			
R31	220K			
R32	47K			
R33	470K			
R34	270Ω			
R35	330Ω 1W			
R36	3.3Ω 5W	PW5-3.3	5W-SQ-3.3	
R37	10K 2W			
R38	470Ω 7W	PW7-470	5W-SQ-470	
R39	33Ω 5W	PW5-33	5W-SQ-33	

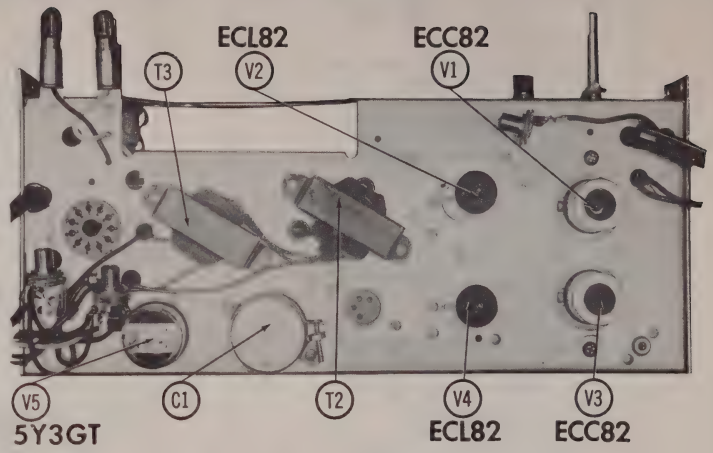
COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA RECORDIO PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	Workman TV PART No.	NOTES
L1	Bias Osc.	B-1,557					

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	SEC. 1	SEC. 2	REPLACEMENT DATA RECORDIO PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T1	117V Ⓐ .85A	580VCT Ⓐ .090A DC	5V Ⓐ 2A	9262				R-112A ①	① Tape CT on 6.3V Winding.
	SEC. 3	SEC. 4	SEC. 5						
	6.3V Ⓐ 2.3A								

AMP CHASSIS—TOP VIEW



TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	SEC.	REPLACEMENT DATA RECORDIO PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T2	7000Ω	3-4Ω	9303	A-3020	A-3823	26S48	S-9Z	
T3	7000Ω	3-4Ω	9303	A-3020	A-3823	26S48	S-9Z	

SPEAKER

ITEM No.	TYPE SIZE	FIELD	V. C. IMP.	REPLACEMENT DATA RECORDIO PART No.	QUAM PART No.	NOTES
SP1	5"x 7"	PM	3-4Ω	C30,363-1	57A1	
SP2	5"x 7"	PM	3-4Ω	C30,363-1	57A1	

MISCELLANEOUS

ITEM No.	PART NAME	RECORDIO PART No.	NOTES
M1	Head	B-36,254	Record (Alternate Part #B-36,258)
M2	Head	C-35,756-1	Erase (Permanent Magnet Type)
M3	Switch	C-35,1312-1	Function Selector (Rotary Wafer Type)
M4	Switch		Monitor (SPST Slide Type)
M5	Switch		Speaker Selector (DPDT Slide Type)
M6	Motor	35,1053-1	Drive

PHOTOFACT® Folder

REGENCY MODELS
CB-27, CBM-27-6, CBM-27-12

REGENCY MODELS
CB-27, CBM-27-6, CBM-27-12

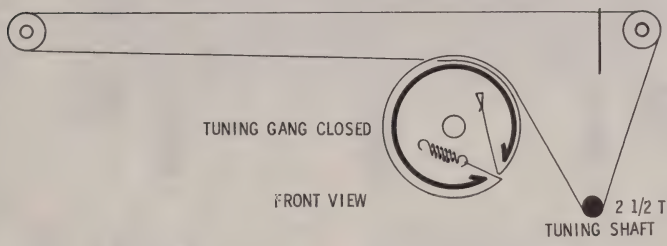
REGENCY MODELS
CB-27, CBM-27-6, CBM-27-12

TRADE NAME	Regency Models CB-27, CBM-27-6, CBM-27-12
MANUFACTURER	Regency, I.D.E.A., 7900 Pendleton Pike, Indianapolis, Indiana
TYPE SET	AC (or Battery) Operated 9 Tube Crystal Controlled Citizens Band Transmitter-Receiver
POWER SUPPLY	Model CB-27: 110–120 Volts AC Model CBM-27-6 : 6Volts DC Model CBM-27-12 : 12Volts DC
RATING	50 Watts, .45 Amp. @117 Volts AC (Receive) 55 Watts, .5 Amp. @117 Volts AC (Transmit)
TUNING RANGE	Any one of Citizens Band Channels 1 thru 22

NOTICE

ONLY THOSE PERSONS PROPERLY LICENSED BY FCC ARE PERMITTED TO EFFECT REPAIRS OR MAKE CRYSTAL SUBSTITUTION ON THIS TYPE EQUIPMENT.

DIAL CORD STRINGING



HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of KZ487

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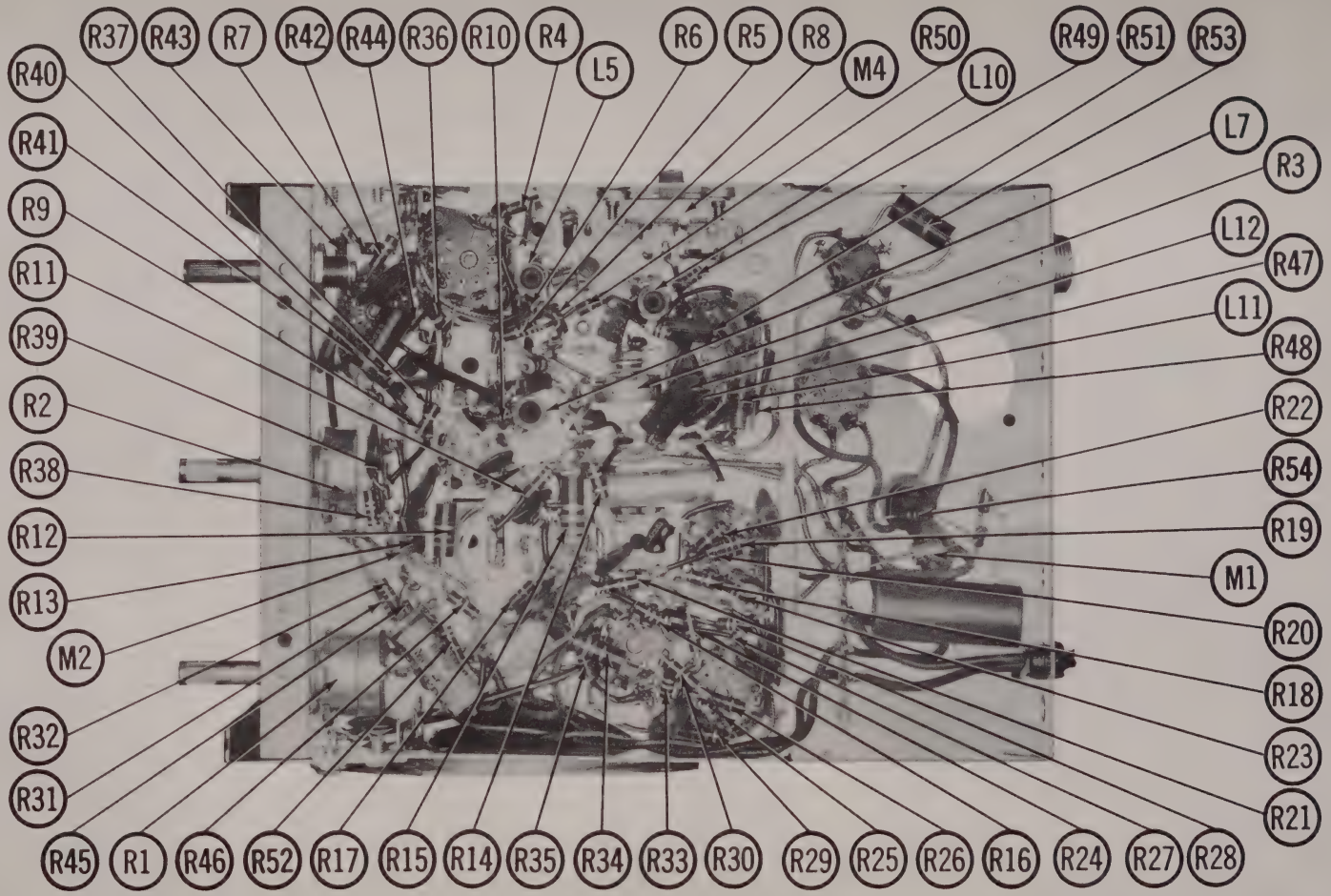
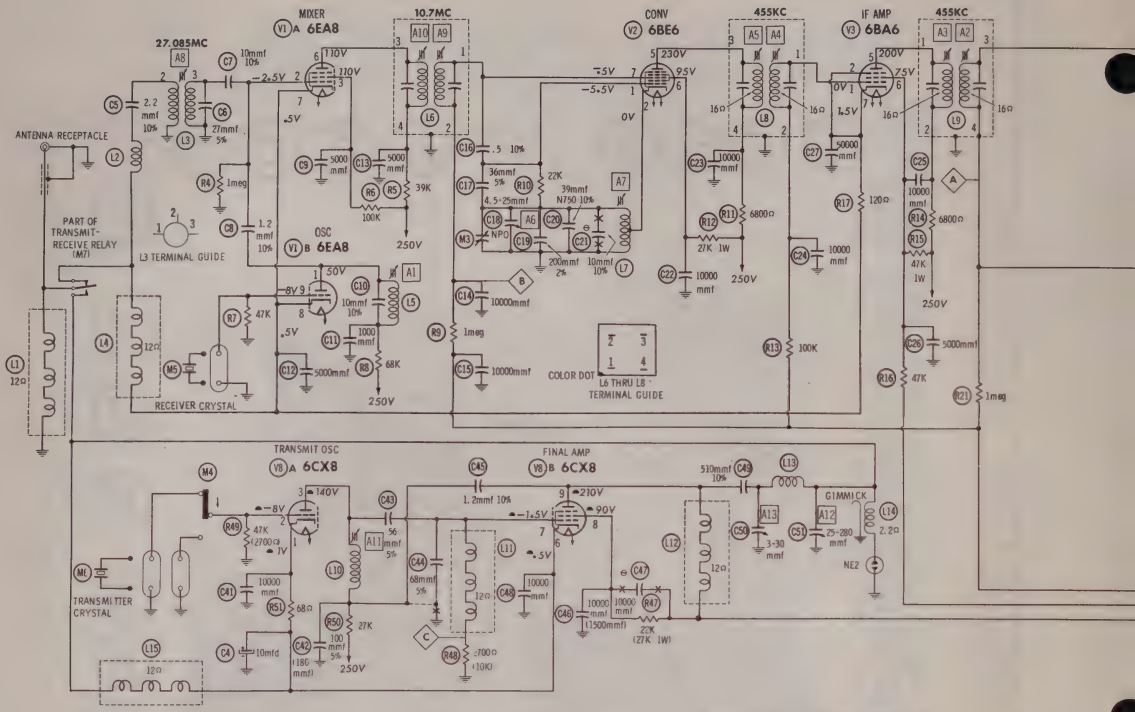
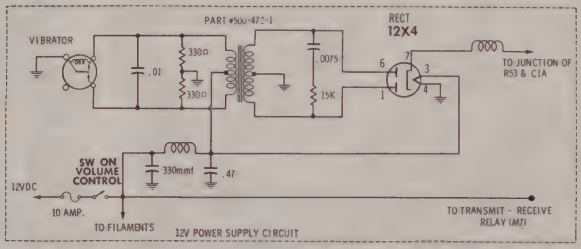
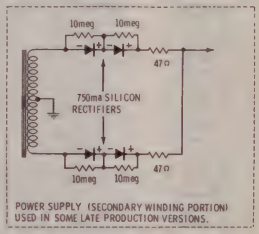


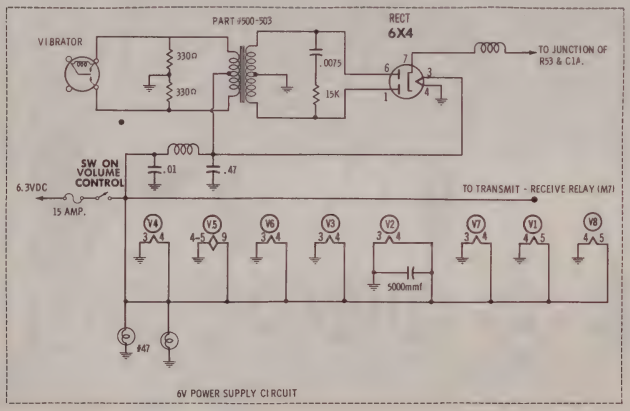
CHASSIS BOTTOM VIEW-RESISTOR, INDUCTOR & MISC. IDENTIFICATION

CHASSIS BOTTON VIEW-ALIGNMENT & CAPACITOR IDENTIFICATION









1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured with 1000 ohm per volt voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

Θ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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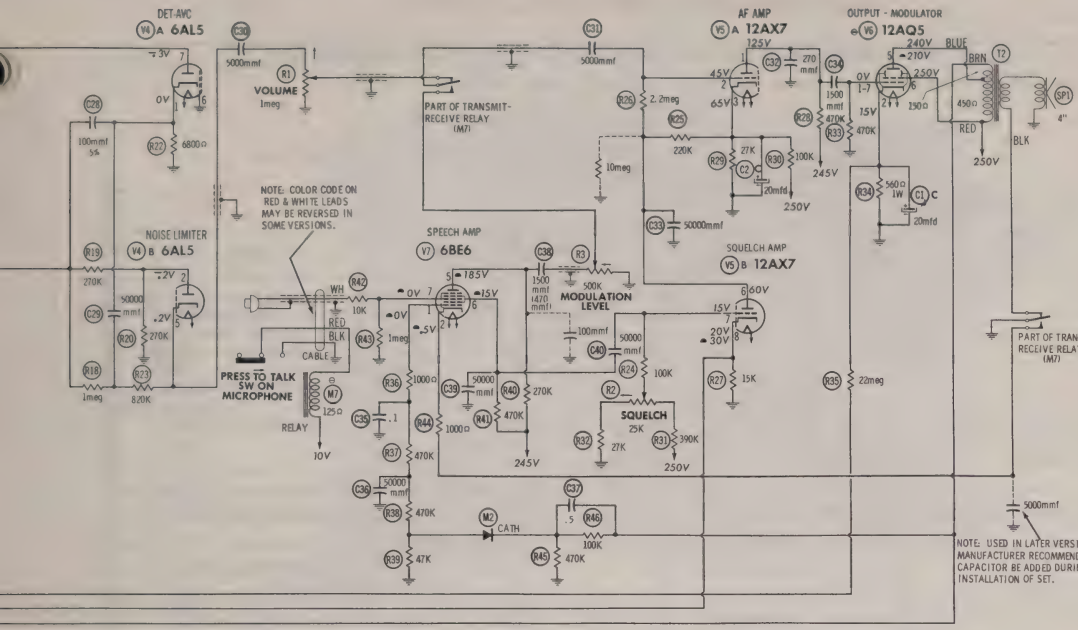
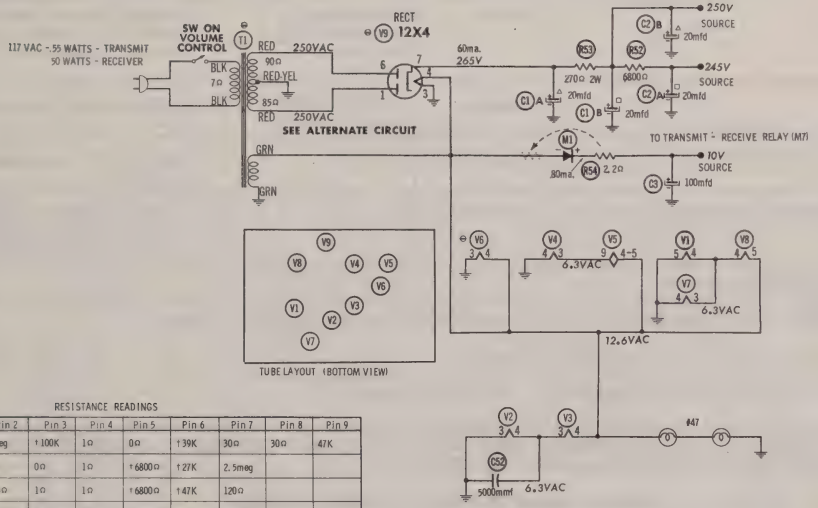




RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6EA8	†68K	1meg	†100K	1Ω	0Ω	†39K	30Ω	30Ω	47K
V2	6BE6	22K	0Ω	0Ω	1Ω	†6800Ω	†27K	2.5meg		
V3	6BA6	1.6meg	120Ω	1Ω	1Ω	†6800Ω	†47K	120Ω		
V4	6AL5	6800Ω	270K	1Ω	0Ω	2.3meg	0Ω	550K		
V5	12AX7	†470K	2.4meg	25K	.1Ω	.1Ω	250K	140K	15K	1Ω
V6	12AQ5	470K	560Ω	0Ω	.1Ω	†720Ω	270Ω	NC		
V7	6BE6	1meg	▬1000Ω	1Ω	0Ω	†280K	†470K	1meg		
V8	6CX8	▬100Ω	47K	†27K	1Ω	.1Ω	▬30Ω	2700Ω	†23K	†870Ω
V9	12X4	85Ω	NC	0Ω	.1Ω	NC	80Ω	¶		

ALL MEASUREMENTS MADE IN "RECEIVE" POSITION UNLESS OTHERWISE DESIGNATED.
¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
▬ MADE IN "TRANSMIT" POSITION.
† MEASURED FROM PIN 7 OF V9.
NC NO CONNECTION

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

REGENCY MODELS
CB-27, CBM-27-6, CBM-27-12

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Suggested Alignment Tools:
A1, A7, A8, A11....GENERAL CEMENT #8282, 8606, 8606-L, 9295, 9440
WALSCO #2526, 2543, 2544, 2545
A2 thru A5, A9, A10. GENERAL CEMENT #5097, 8727
WALSCO #2515
A6, A12, A13.....GENERAL CEMENT #5000, 5003, 5066, 8276, 8290, 9087, 9089
WALSCO #2512, 2525, 2528

RECEIVER ALIGNMENT

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
1.				DC probe to pin 3 (screen) of Mixer (V1). Common to chassis.	A1	Adjust for maximum deflection. Turn counterclockwise (from bottom) for abrupt drop in voltage. Slowly turn clockwise for abrupt rise in voltage. Turn an additional 1/4 turn. Meter should read approximately +100 Volts.
2.	High side to pin 7 (grid) of 2nd IF Converter. Low side to chassis.	455KC (400∿ AM Mod.)		DC probe thru 1meg to point Ⓐ. Common to chassis.	A2, A3, A4, A5	Adjust for maximum deflection.
3.	Across antenna receptacle.	26.965MC (Channel 1)	Channel 1.	"	A6	Adjust for maximum deflection.
4.	"	27.225MC (Channel 2)	Channel 22.	"	A7	Adjust for maximum deflection. Repeat Steps 3 and 4.
5.	"	27.085MC (Channel 11)	Channel 11 Signal.	"	A8, A9, A10	Adjust for maximum deflection. Repeat Step 1.
6.			Channel 11.	DC probe thru 1meg to point Ⓑ. Common to chassis.		Adjust Capacitor C16 for maximum deflection by twisting leads. (Do not short capacitor).
7.			Channel 1.	OUTPUT METER across voice coil.		Adjust A10 for maximum noise output.
8.			Channel 22	"		Adjust A9 for maximum noise output.
9.	Across antenna receptacle.	27.085MC (400∿ Mod.)	Channel 11.	"		Adjust Capacitor C5 for maximum output by twisting capacitor leads. (Do not short capacitor).

TRANSMITTER ALIGNMENT

1. Connect a 50Ω RF Wattmeter to antenna jack thru 3 feet of coaxial cable (RG8 or RG58).
2. Set up transmitter for Channel 22 (27.225MC).
3. Connect DC probe of VTVM to point Ⓒ, common to chassis.
4. Adjust A11 counterclockwise for maximum deflection. Continue turning all counterclockwise for an abrupt drop in meter deflection. Turn A11 slowly clockwise for an abrupt rise in meter deflection. Continue turning A11 clockwise 1/4 turn. (Meter should indicate approximately -3V).
5. Adjust A12 and A13 for maximum output on RF Wattmeter (2 Watts minimum).

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	TYPE
V1	Mixer-Oscillator	6EA8
V2	IF Conv.	6BE6
V3	IF Amplifier	6BA6
V4	Det. -AVC-Noise Limiter	6AL5
V5	AF Amp. -Squelch Amp.	12AX7
V6	Output — Modulator	12AQ5 (6AQ5) *
V7	Speech Amplifier	6BE6
V8	Trans. Osc. — Final Amp.	6CX8
V9	Rectifier	12X4 (6X4) *

* Used in 6 Volt versions.

ELECTROLYTIC CAPACITORS

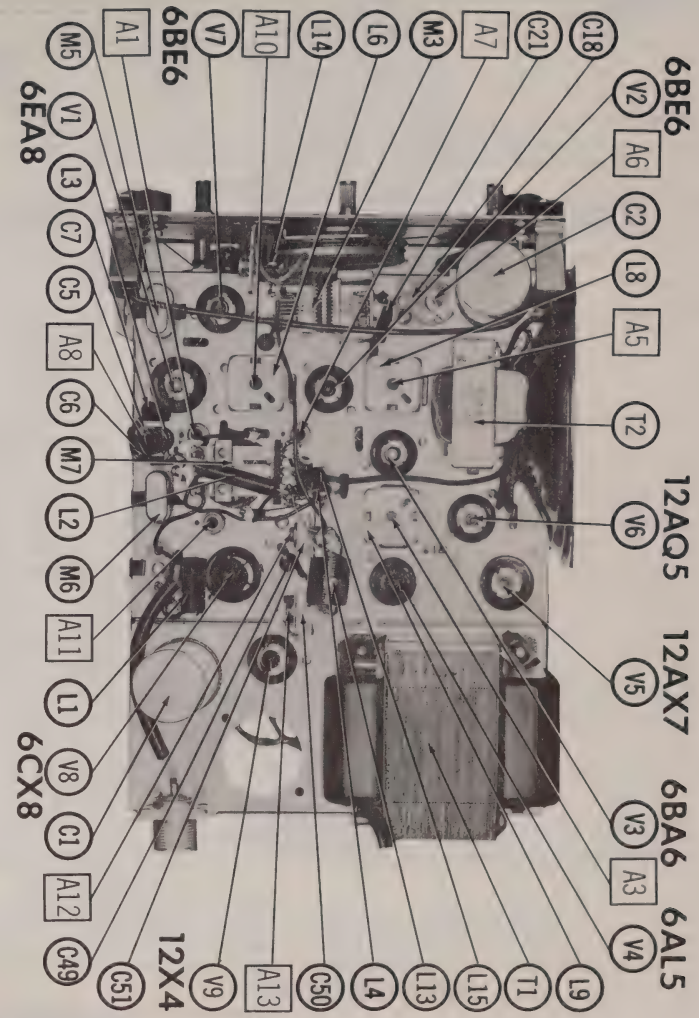
ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA REGENCY PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	▲20	350	300-773-2	AFH3-28-30	B0300	FP227	TMT-3432	TVL-3639.8	
B	■20	350			BBR20-150	TT50X20			
C	20	50							
C2A	■20	350	300-773-2	AFH3-28-30	B0300	FP227	TMT-3432	TVL-3639.8	
B	▲20	350			BBR20-150	TT50X20			
C	20	50							
C3	100	25	300-718-5	PRS1270	BBR100-25	TC2501	TD-100-25	TVA-1207	
C4	10	150	300-718-6	SRE150V10	NLW10-150	TT150X10	MLV10-150	TE-1507	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C5	2.2 10%		NPO-SI 2.2	TCZ-2R2	C10V22C	CCTO-2R2	CNO-522	10TCC-V22
C6	27 5%		1469-000027	TCZ-27	22R5Q27	CM-19B-270J	CNO-427	MS-427
C7	10 10%		1469-00001	TCZ-10	22R5Q1	CM-19B-100K	MCB215	MS-410
C8	1.2 10%		NPO-SI 1.5	TCZ-1R5	C10V15C		CNO-515	10TCC-V12
C9	5000		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C10	10 10%		1469-00001	TCZ-10	22R5Q1	CM-19B-100K	MCB215	MS-410
C11	1000		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C12	5000		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C13	5000		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C14	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C15	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C16	.5 10%		NPO-SI .5	TCZ-R5				
C17	36 5%		1469-000036	TCZ-36	22R5Q36	CM-19B-360J		MS-436
C18	4.5-25 NPO			822-AZ				
C19	200 2%					VCM-20-20IG	MCE237	
C20	39 N750 10%		N750-SI 39	TCN-39	C10Q39U	CCTN-390	CN7-439	10TCU-Q39
C21	100 10%	Note 1	1469-0001	TCZ-100	22R5T1	CM-19B-101K	MCB235	MS-31
C22	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C23	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C24	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C25	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C26	5000		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C27	50000		BPD-05	DD-503	CUB485	4DP-3-503	GP150	5HK-S50
C28	100 5%		1469-0001	TCZ-100	22R5T1	CM-19B-101J	MCE235	MS-31
C29	50000		BPD-05	DD-503	CUB485	4DP-3-503	GP150	5HK-S50
C30	5000		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C31	5000		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C32	270		DI-270	DD-271	L10T27	CCD-271	B-327	10T8-T27
C33	50000		BPD-05	DD-503	CUB485	4DP-3-503	GP150	5HK-S50
C34	1500		BPD-0015	DD-152	BYA10D15	CCD-152	B-215	5HK-D15
C35	.1 200V		P288N-1	DF-104	CUB2P1	2DP-3-104	GEM-201	2TM-P10
C36	50000		BPD-05	DD-503	CUB485	4DP-3-503	GP150	5HK-S50
C37	.5 200V		P288N-5		CUB2P5	2DP-5-504	GEM-205	2TM-P50
C38	1500	(470) †	BPD-0015	DD-152	BYA10D15	CCD-152	B-215	5HK-D15
C39	50000		BPD-05	DD-503	CUB485	4DP-3-503	GP150	5HK-S50
C40	50000		BPD-05	DD-503	CUB485	4DP-3-503	GP150	5HK-S50
C41	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C42	100 5%	(180) †	1469-0001	TCZ-100	22R5T1	CM-19B-101J	MCE235	MS-31
C43	56 5%		1469-000056	TCZ-56	22R5Q56	CM-19B-560J	CNO-456	MS-456
C44	68 5%		1469-000068	TCZ-68	22R5Q68	CM-19B-680J	CNO-468	MS-468
C45	1.2 10%		NPO-SI 1.5	TCZ-1R5	C10V15C		CNO-515	10TCC-V12
C46	10000	(1500) †	BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C47	10000	Note 1	BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C48	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10

CHASSIS—TOP VIEW



REGENCY MODELS
CB-27, CBM-27-6, CBM-27-12

FOLDER 13

PARTS LIST AND DESCRIPTIONS (Continued)

FIXED CAPACITORS (cont)

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C49	510 10%		1469-000510		5R5T51	CM-19B-511K	MCB245	MS-351
C50	3-30					461		
C51	25-280					464		
C52	5000		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50

Note 1. Not used in some versions.
† Alternate Value.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	REGENCY PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1A	1meg	½	100-093-8	B-70-S	A47-1meg-Z	Q13-137	U53	Volume
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	
C	Switch			Not Req.	SWE-12	76-1	US-26	Power Off-On
R2A	25K	½	100-093-9	B-27	A47-25K-V		U28	Squelch
B	Shaft			Not Req.	KSS-3		Not Req.	
R3	500K	1/4	100-596-1	JL-504	44-500K-W		MLCN55A	Modulation Level

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA		REMARKS
		IRC PART No.	WORKMAN TV PART No.	
R4	1meg			
R5	39K			
R6	100K			
R7	47K			
R8	68K			
R9	1meg			
R10	22K			
R11	6800Ω			
R12	27K 1W			
R13	100K			
R14	6800Ω			
R15	47K 1W			
R16	47K			
R17	120Ω			
R18	1meg			
R19	270K			
R20	270K			
R21	1meg			
R22	6800Ω			
R23	820K			
R24	100K			
R25	220K			
R26	2.2meg			
R27	15K			
R28	470K			
R29	27K			
R30	100K			
R31	390K			
R32	27K			
R33	470K			
R34	560Ω 1W			
R35	22meg			
R36	1000Ω			
R37	470K			
R38	470K			
R39	47K			
R40	270K			
R41	470K			
R42	10K			
R43	1meg			
R44	1000Ω			
R45	470K			
R46	100K			
R47	22K			(27K 1W) †
R48	2700Ω			(10K) †
R49	47K			(2700Ω) †
R50	27K			
R51	68Ω			
R52	6800Ω			
R53	270Ω 2W			
R54	2.2Ω			

† Alternate Value.

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA				NOTES
		REGENCY PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	
L1	RF Choke(209uh)	101-379-1	TV-197	6154	RTC-8586	
L2	RF Choke (10uh)	300-303-1	BC-566	4612	RTC-8522	
L3	Ant.	101-388				
L4	RF Choke(209uh)	101-379-1	TV-197	6154	RTC-8586	
L5	1st Receiver Osc.	300-882	TV-118	6171-A	RTC-8609	
L6	1st IF (10.7MC)	1607-6	FM-254	1463	RTC-8599	
L7	2nd Receiver Osc.	300-881				
L8	1st IF (455KC)	1655-6	BC-352	12-C1	RTC-8632	
L9	2nd IF (455KC)	1655-6	BC-353	12-C2	RTC-8633	
L10	Trans. Osc.	300-880	TV-118	6171-A	RTC-8609	
L11	RF Choke(209uh)	101-379-1	TV-197	6154	RTC-8586	
L12	RF Choke (209uh)	101-379-1	TV-197	6154	RTC-8586	
L13	Final Output	101-390				
L14	RF Choke	101-380				
L15	RF Choke(209uh)	101-379-1	TV-197	6154	RTC-8586	

TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA				NOTES
	PRI.	SEC. 1	SEC. 2	REGENCY PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	117V @ .5A	500VCT @ .075A DC	12.6V @ 1.8A	500-470①					

① Alternate Part #500-470-1. Part #500-472-1 used in Model CBM-27 (12V). Part #500-503 used in Model CBM-27 (6V).

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA					NOTES
	PRI.	SEC.	REGENCY PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	7500Ω Tap @ 5600Ω	3-4Ω	(Part of SP1)					

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	REGENCY PART No.	QUAM PART No.	
SP1	4"	PM	3-4Ω	500-467 *	4A07 ‡	* Includes T2 ‡ Cut Mounting Tab to Fit.

POWER RECTIFIERS

ITEM No.	RATING	REPLACEMENT DATA				NOTES
	CURRENT (Measured)	REGENCY PART No.	RCA PART No.	SARKES TARZIAN PART No.	SYLVANIA PART No.	
M1	.080A	SD-91 *	1N1763 *	2F4 *	SR200 *	* Silicon Type
M2	Signal	F-6 *	1N1763 *	F6 *	SR500 *	

MISCELLANEOUS

ITEM No.	PART NAME	REGENCY PART No.	NOTES
M3	Tuning Cap.	300-876	Oscillator Tuning
M4	Switch	SS-32	Receive-Transmit (SPDT Slide Type)
M5	Crystal	300-886	Receive (37.795 MC)
M6	Crystal	300-887	Transmit (When ordering, specify required frequency)
M7	Relay	101-436	Model CBM-27 (12V)
	Relay	101-514	Model CBM-27 (6V)
	Microphone	101-391	Includes Cord & Push-To-Talk Switch

VIBRATOR

ITEM No.	TYPE	INPUT VOLTS	FREQUENCY	REPLACEMENT DATA				NOTES
				REGENCY PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	RADIART PART No.	
	Interrupter	6	115v		5301	1601	5301	Model CBM-27 (6V)
	Interrupter	12	115v		6301	G1601	6301	Model CBM-27 (12V)

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Glass	300-883	Dial
Knob	101-375-1	Tuning
Knob	101-375-2	Volume
Knob	101-375-3	Squelch
Pointer	100-823	Dial

WIRING DATA

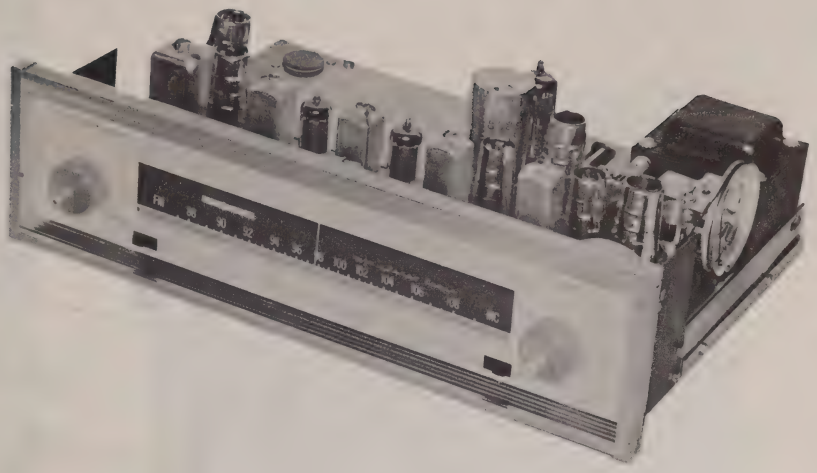
General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)

PHOTOFACT® Folder

**SHERWOOD MODEL
S-3000 III**

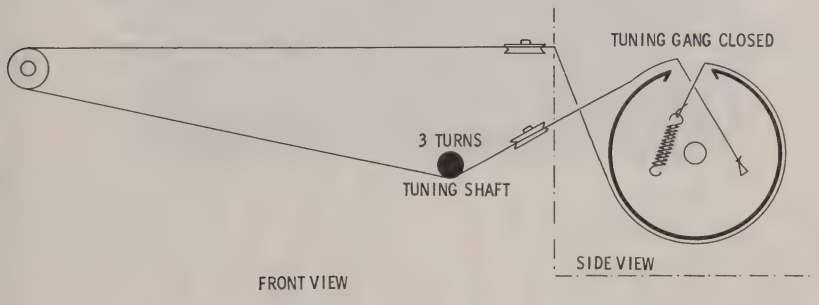
SHERWOOD MODEL
S-3000 III



SHERWOOD MODEL
S-3000 III

TRADE NAME	Sherwood Model S-3000III (Serial #3012001 and up)
MANUFACTURER	Sherwood Electronic Laboratories, Inc., 4300 N. California Ave., Chicago 18, Illinois
TYPE SET	AC Operated 10 Tube FM-AM Tuner
POWER SUPPLY	110 – 120 Volts AC, 50-60 Cycles RATING 53 Watts, .52 Amp. @117 Volts AC
TUNING RANGE—FREQ. MOD.	88 – 108MC

DIAL CORD STRINGING



HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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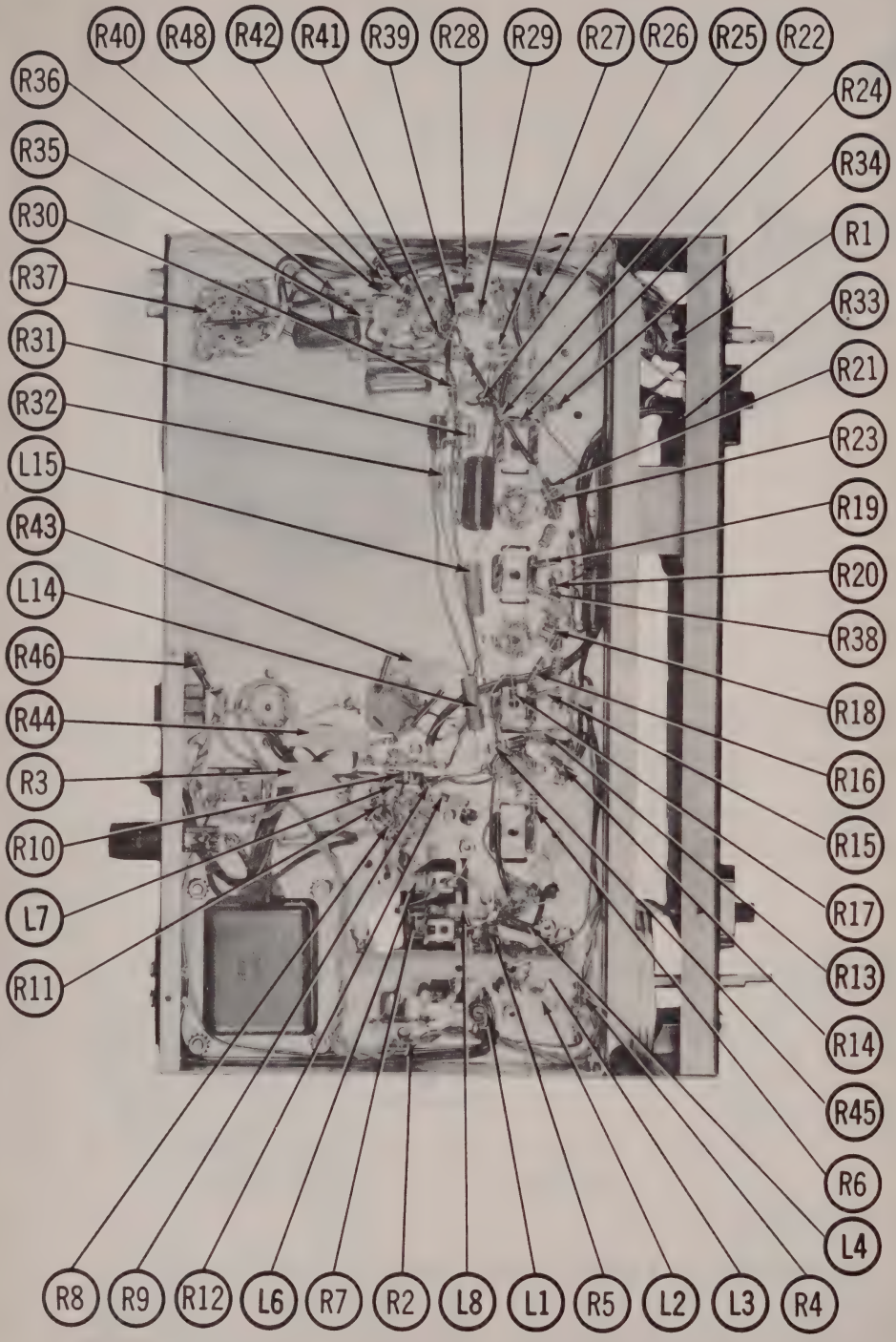
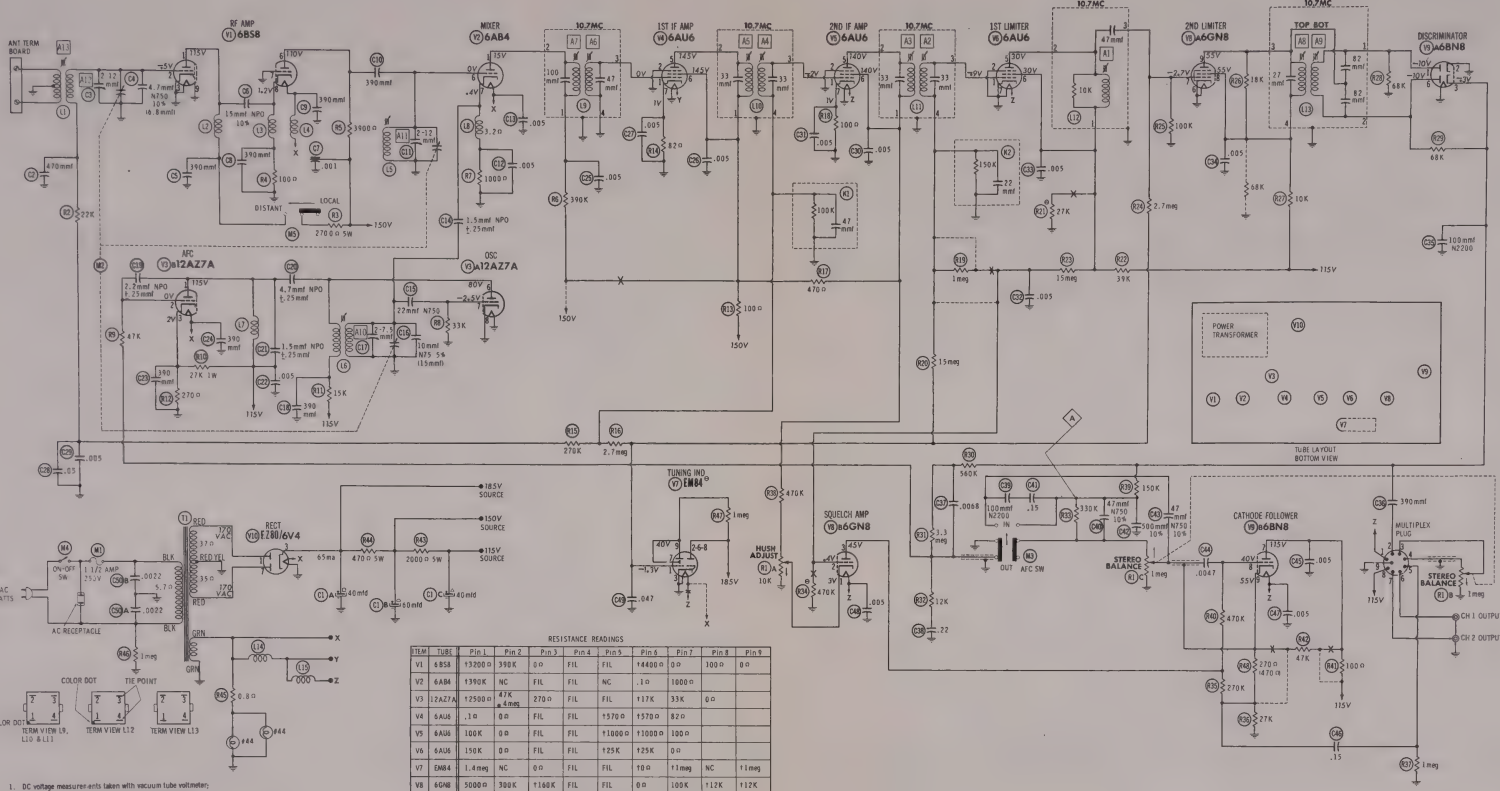
SET 544 FOLDER 14



CHASSIS BOTTOM VIEW-RESISTOR & INDUCTOR IDENT.



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6BS8	†3200Ω	390K	0Ω	FIL	FIL	†4400Ω	0Ω	100Ω	0Ω
V2	6AB4	†390K	NC	FIL	FIL	NC	.1Ω	1800Ω		
V3	½12AZ7A	†2500Ω	47K ■ 4meg	270Ω	FIL	FIL	†17K	33K	0Ω	
V4	6AU6	.1Ω	0Ω	FIL	FIL	†570Ω	†570Ω	82Ω		
V5	6AU6	100K	0Ω	FIL	FIL	†1000Ω	†1000Ω	100Ω		
V6	6AU6	150K	0Ω	FIL	FIL	†25K	†25K	0Ω		
V7	EM84	1.4meg	NC	0Ω	FIL	FIL	†0Ω	†1meg	NC	†1meg
V8	½6GN8	5000Ω	300K	†160K	FIL	FIL	0Ω	100K	†12K	†12K
V9	½6BN8	68K	0Ω	135K	FIL	FIL	68K	†2600Ω	800K	20K
V10	EZ80 6V4	37Ω	NC	¶15K	FIL	FIL	NC	35Ω	NC	NC

ALL MEASUREMENTS MADE IN "DISTANT" POSITION WITH AFC OFF UNLESS OTHERWISE DESIGNATED.
¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
■ MEASURED WITH AFC SW ON THE "IN" POSITION.
† MEASURED FROM PIN 3 OF V10. NC NO CONNECTION

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured with 1000 ohm per volt voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

● SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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SHERWOOD MODEL S-3000 III

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use only enough generator output to provide a usable indication.

Suggested Alignment Tools:
A1 thru A9....GENERAL CEMENT #8282, 8606, 8606-L, 9295, 9440
WALSCO #2526, 2543, 2544, 2545
A10, A11, A12...GENERAL CEMENT #5004, 5009, 8195, 8274, 8275, 8607, 8728, 8987, 8988, 8989, 9291
WALSCO #2515, 2520, 2522, 2523, 2531, 2532, 2534, 2537, 2538
A13.....GENERAL CEMENT #5009, 8195, 8274, 8275, 8728, 8729, 8987, 8988, 8989
WALSCO #2515, 2531, 2532

IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
1.	High side thru .01mfd to pin 6 (grid) of Mixer. Low side to chassis.	10.7MC (Unmod.)	Point of non-interference.	DC probe thru 100K to pin 7 (grid) of 2nd Limiter. Common to chassis.	A1, A2, A3, A4, A5, A6, A7	Adjust for maximum deflection.
2.	"	"	"	DC probe to point Ⓐ. Common to chassis.	A8, A9	Detune A9 and adjust A8 for maximum deflection. Adjust A9 for zero reading. A positive and a negative reading will be obtained on either side of the correct setting.

IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60~ modulation and 450KC sweep. Use 120~ sawtooth voltage in scope for horizontal deflection.

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
1.	High side thru .01mfd to pin 6 (grid) of Mixer. Low side to chassis.	10.7MC (450KC Swp)	Point of non-interference.	Vert. amp. thru 100K to pin 7 (grid) of 2nd Limiter. Low side to chassis.	A1, A2, A3, A4, A5, A6, A7	Adjust for maximum gain and symmetry of response similar to Fig. 1 with markers as shown.
2.	"	"	"	Vert. amp. to point Ⓐ. Low side to chassis.	A8, A9	Adjust A8 for maximum amplitude. Adjust A9 to place marker at center of crossover lines similar to Fig. 2. Retouch A8 for maximum amplitude and straightness of crossover lines.

RF ALIGNMENT

Coils not containing adjustable cores are adjusted by expanding or compressing coil turns.

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
3.	Across antenna terminals with 150Ω in each lead.	106MC (Unmod.)	106MC	DC probe thru 100K to pin 7 (grid) of 2nd Limiter. Common to chassis.	A10, A11, A12	Adjust for maximum deflection.
4.	"	90MC	90MC	"	L6, L5, A13	"

FIG. 1

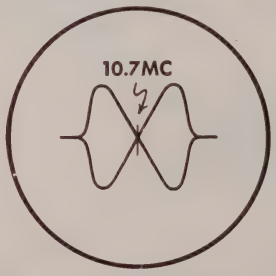


FIG. 2

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
	• GENERAL ELECTRIC •		RAYTHEON •	SYLVANIA •	
V1	RF Amplifier	6BS8	V7	Tuning Indicator	EM84 (6FG6) *
V2	Mixer	6AB4	V8	2nd Limiter-Squelch Amplifier	6GN8
V3	Osc.-FM AFC	12AZ7A	V9	Discriminator-Cathode Follower	6BN8
V4	1st IF Amplifier	6AU6	V10	Rectifier	EZ80/6V4
V5	2nd IF Amplifier	6AU6			
V6	1st Limiter	6AU6			

* Alternate Type.

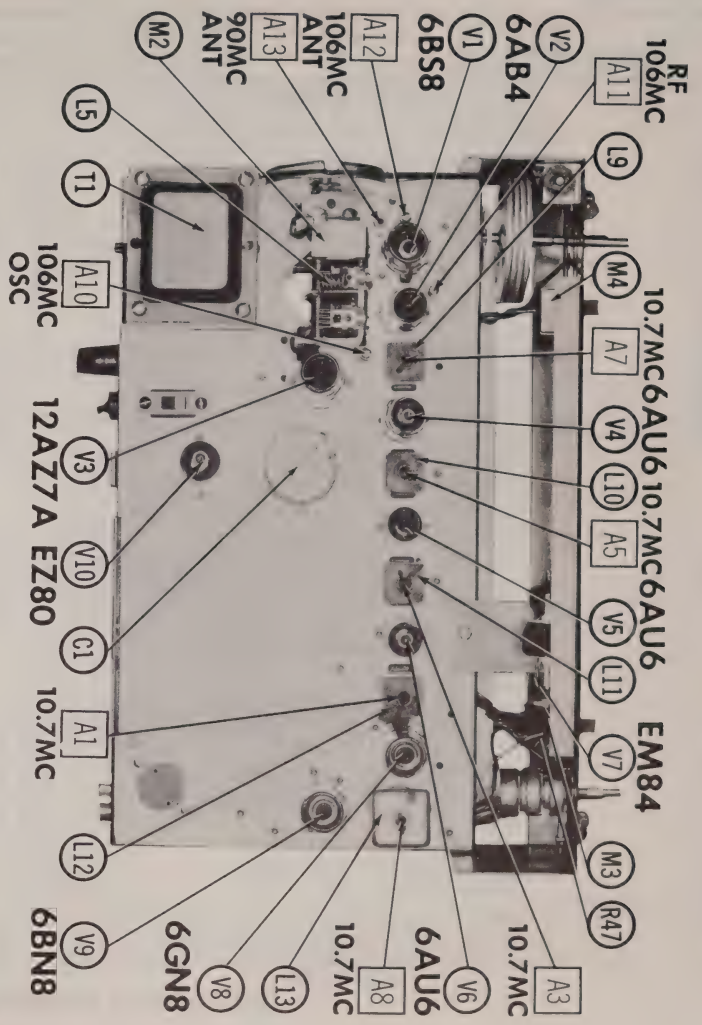
ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA SHERWOOD PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	▪40	250		AFH3-101-20	XB0243	FP326.64	TMT-3304	TVL-3583	
B	▪60	250			BR4025				
C	▲40	250							

FIXED CAPACITORS

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C2	470		BPD-00047	DD-471	BYA10T47	CCD-471	B-347	10TS-T47
C3	2-12							
C4	4.7 N750 10%	(6.8) †		DTN-5	C10V5U	CCTN-050	CN7-547	10TCU-V50
C5	390		DI-390	DD-391	L10T39	CCD-391	B-339	10TS-T39
C6	15 NPO 10%		NPO-DI 15	DTZ-15	C10Q15C	CCTO-150	CNO-415	10TCC-Q15
C7	.001		EF-001	MFT-1000		CCF-102	CT280A	
C8	390		DI-390	DD-391	L10T39	CCD-391	B-339	10TS-T39
C9	390		DI-390	DD-391	L10T39	CCD-391	B-339	10TS-T39
C10	390		DI-390	DD-391	L10T39	CCD-391	B-339	10TS-T39
C11	2-12							
C12	.005		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C13	.005		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C14	1.5 NPO ±.25mmf		NPO-DI 1.5	DTZ-1R5	C10V15C		CNO-515	10TCC-V15
C15	22 N750		N750-DI 22	DTN-22	C10Q22U	CCTN-220	CN7-422	10TCU-Q22
C16	10 N75 5%	(15) †				"		
C17	2-7.5			829-7				
C18	390		DI-390	DD-391	L10T39	CCD-391	B-339	10TS-T39
C19	2.2 NPO ±.25mmf		NPO-DI 2.2	DTZ-2R2	C10V22C	CCTO-2R2	CNO-522	10TCC-V22
C20	4.7 NPO ±.25mmf		NPO-DI 4.7	DTZ-4R7	C10V47C	CCTO-4R7	CNO-547	10TCC-V47
C21	1.5 NPO ±.25mmf		NPO-DI 1.5	DTZ-1R5	C10V15C		CNO-515	10TCC-V15
C22	.005		BPD-005	DD-502	BYA10D5	CCD-502	B-215	5HK-D50
C23	390		DI-390	DD-391	L10T39	CCD-391	B-339	10TS-T39
C24	390		DI-390	DD-391	L10T39	CCD-391	B-339	10TS-T39
C25	.005		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C26	.005		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C27	.005		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C28	.05		BPD-05	DD-503	CUB6S5	CCD-503	GP-150	5HK-550
C29	.005		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C30	.005		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C31	.005		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C32	.005		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C33	.005		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C34	.005		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C35	100 N2200					"		
C36	390	Note 1	DI-390	DD-391	L10T39	CCD-391	B-339	10TS-T39
C37	.0068 400V		P488N-0068	D6-682	CUB6D68	6DP-1-682	GEM-6268	6TM-D68
C38	.22 200V		P288N-22		CUB2P22	2DP-4-224	GEM-2022	2TM-P22
C39	100 N2200					"		
C40	47 N750 10%	Note 1	N750-DI 47	DTN-47	C10Q47U	CCTN-470	CN7-447	10TCU-Q47
C41	.15 200V	Note 1	P288N-15		CUB2P15	2DP-3-154	GEM-2015	2TM-P15
C42	500 10%		DI-500	DD-501	5R5T5	CCD-501	B-350	10TS-T50
C43	47 N750 10%	Note 1	N750-DI 47	DTN-47	C10Q47U	CCTN-47	CN7-447	10TCU-Q47
C44	.0047		BPD-0047	DD-472	BYA10D47M	CCD-472	B-247	5HK-D47
C45	.005		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

FIXED CAPACITORS (cont)

ITEM No.	RATING	REMARKS	REPLACEMENT DATA: AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C46	.15 200V		P286N-15		CUB2P15	2DP-3-154	GEM-2015	2TM-P15
C47	.005		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C48	.005		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C49	.047 400V		P486N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C50A	.0022		BPD-2X0022	DD-222	BYA10D22	CCD-222	B-222	5HK-2D22
B	.0022			DD-222	BYA10D22	CCD-222	B-222	

† Alternate Value.
Note 1. Not used in some versions.
* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: SHERWOOD PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	10K	½	A670G2-4					Hush Adjust
B	1meg	½						Stereo Balance
C	1meg	½						Stereo Balance

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA: IRC PART No.	WORKMAN TV PART No.	REMARKS
R2	22K			
R3	2200Ω 5W	PW5-2.7K	5W-SQ-2.7K	
R4	100Ω			
R5	3900Ω			
R6	390K			(150K) *
R7	1000Ω			
R8	33K			
R9	47K			
R10	27K 1W			
R11	15K			
R12	270Ω			
R13	100Ω			
R14	82Ω			
R15	270K			
R16	2.7meg			
R17	470Ω			
R18	100Ω			
R19	1meg			
R20	15meg			
R21	27K			Note 1
R22	39K			
R23	15meg			
R24	2.7meg			
R25	100K			

ITEM No.	RATING	REPLACEMENT DATA: IRC PART No.	WORKMAN TV PART No.	REMARKS
R26	18K			
R27	10K			
R28	68K			
R29	68K			
R30	560K			
R31	3.3meg			
R32	12K			
R33	330K			
R34	470K			Note 1
R35	270K			
R36	27K			
R37	1meg			
R38	470K			
R39	150K			
R40	470K			
R41	100Ω			
R42	47K			
R43	2000Ω 5W	PW5-200	5W-SQ-2000	
R44	470Ω 5W	PW5-470	5W-SQ-470	
R45	0.8Ω			
R46	1meg			
R47	1meg			
R48	270Ω			(470Ω) *

Note 1. Not used in some versions.
* Alternate Value.

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	SHERWOOD PART No.	REPLACEMENT DATA
K1	1st Limiter Grid Filter	47mmf, 100K		
K2	2nd Limiter Grid Filter	22mmf, 150K		

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA: SHERWOOD PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	Workman TV PART No.	NOTES
L1	Ant.						① IRC Part #CLA
L2	RF Choke(1.1uh)		BC-561	4602	RTC-8515	T855	
L3	RF Choke(1.1uh)		BC-561	4602	RTC-8515	T855	
L4	Fil. Choke(1.5uh)		BC-562	4604	RTC-8516	T856	
L5	RF						
L6	Oscillator						
L7	RF Choke(1.1uh)		BC-561	4602	RTC-8515	T855	
L8	RF Choke (3.9uh)	①	BC-564	4608	RTC-8518	T858	
L9	1st IF		FM-254	1463	RTC-8599	T633	
L10	2nd IF		FM-254	1463	RTC-8599	T633	
L11	3rd IF		FM-254	1463	RTC-8599	T633	
L12	Limiter						
L13	Discriminator						
L14	Fil. Choke (1.5uh)		BC-562	4604	RTC-8516	T856	
L15	Fil. Choke (1.5uh)		BC-562	4604	RTC-8516	T856	

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	RATING: SEC. 1	RATING: SEC. 2	REPLACEMENT DATA: SHERWOOD PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T1	117V ⓐ .52A	340VCT ⓐ .065A DC	6.3V ⓐ 4.2A	B922G3-10					

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA: SHERWOOD PART No. FUSE	SHERWOOD PART No. HOLDER	LITTELFUSE PART No. FUSE	LITTELFUSE PART No. HOLDER	BUSS PART No. FUSE	BUSS PART No. HOLDER
M1	3AG	1½A 250V			31201.5 (3AG 1½A 250V)	342001	AGC 1½	HKP

MISCELLANEOUS

ITEM No.	PART NAME	SHERWOOD PART No.	NOTES
M2	Tuning Cap.		3 Gang
M3	Switch		AFC (DPDT Slide Type)
M4	Switch		Off-On (DPST Slide Type)
M5	Switch		Local-Distant (SPDT Slide Type)

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors
Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)

PHOTOFACT® Folder with CIRCUITRACE®

SILVERTONE MODELS 1016, 1017, 1018 (Ch. 132.60401)

SILVERTONE MODELS
1016, 1017, 1018 (Ch. 132.60401)

MODEL 1016

SILVERTONE MODELS
1016, 1017, 1018 (Ch. 132.60401)

TRADE NAME	Silvertone Models 1016, 1017, 1018 (Ch. 132.60401)
SUPPLIER	Sears, Roebuck & Co., 925 S. Homan Ave., Chicago, Illinois
TYPE SET	Battery Operated Transistorized AM Receiver
POWER SUPPLY	9 Volts DC RATING 9MA @ 9 Volts DC (No Signal, Min. Volume)
TUNING RANGE—BROADCAST	540 – 1650KC 15MA @ 9 Volts DC (Signal, Normal Volume)

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested Alignment Tools:
A1, A2..... GENERAL CEMENT #5009, 8195, 8274, 8275, 8728, 8729, 8987, 8988, 8989
WALSCO #2515, 2531, 2532
A3, A4, A6..... GENERAL CEMENT #8282, 8606, 8606-L, 9295, 9440
WALSCO #2526, 2543, 2544, 2545
A5, A7..... GENERAL CEMENT #5004, 5009, 8195, 8274, 8275, 8607, 8728, 8987, 8988, 8989, 9291
WALSCO #2515, 2520, 2522, 2531, 2532, 2534, 2537, 2538, 2523

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	High side thru .05mfd to antenna stator lug of tuning gang. Low side to chassis.	455KC (400~ Mod.)	Tuning gang fully open.	Across voice coil.	A1, A2, A3, A4	Adjust for maximum output.
2.	Loop	1670KC	"	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.	"	600KC	600KC	"	A6	"
4.	"	1400KC	1400KC Signal.	"	A7	Adjust for maximum output. Repeat Steps 2, 3, and 4.

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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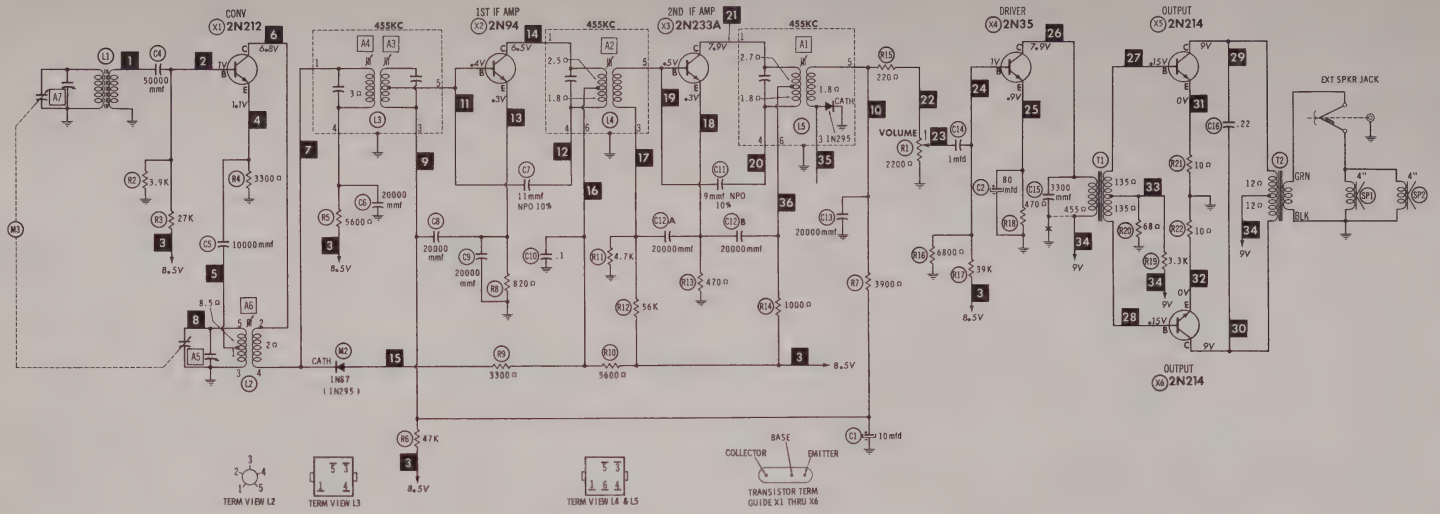
KG503

SET 544 FOLDER 15



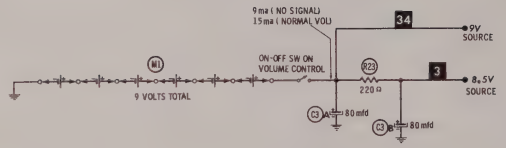
1. DC voltage measurements taken with vacuum tube voltmeter.
2. Socket connections or transistor terminals are shown as bottom views.
3. Measured values are from socket pin or terminal to common ground.
4. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
5. Volume control at maximum, no signal applied for voltage measurements.

RESISTANCE MEASUREMENTS NOT GIVEN BECAUSE OF THE WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE.

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.



A PHOTOFACT STANDARD NOTATION SCHEMATIC with CIRCUITRACE

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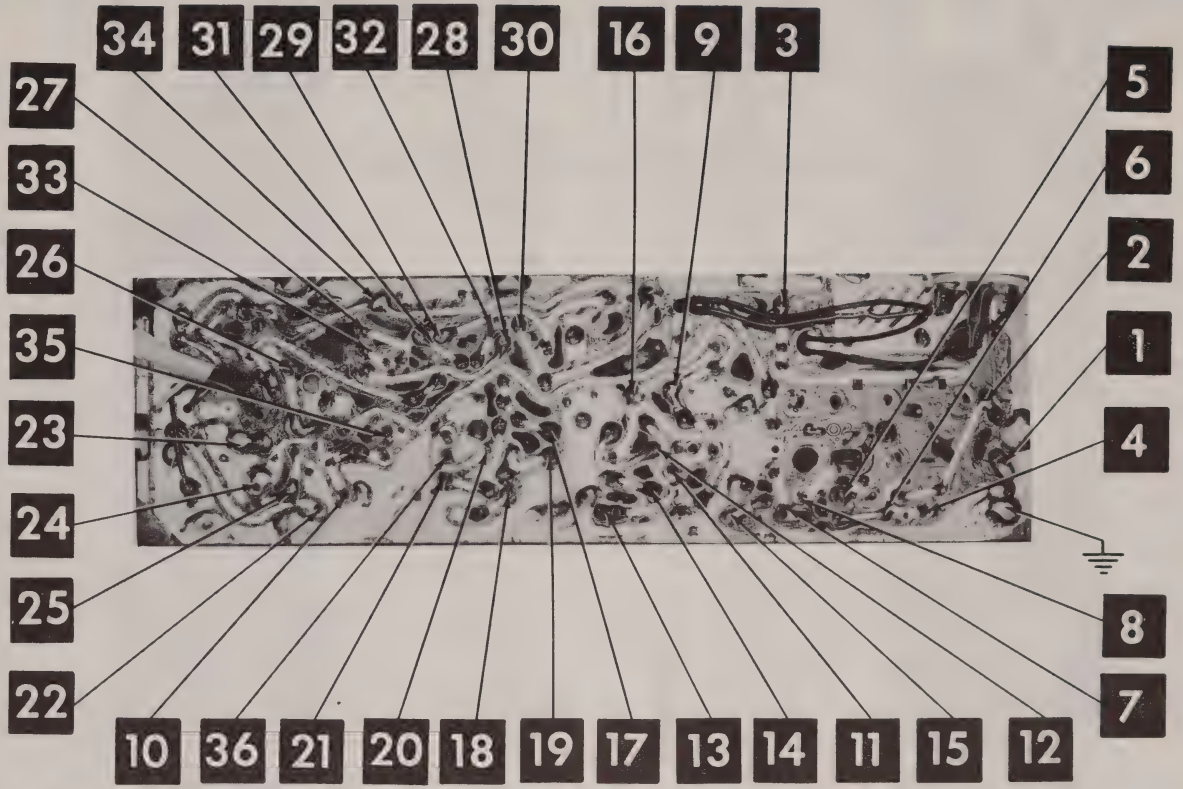
SILVERTONE MODELS
1016, 1017, 1018 (Ch. 132.60401)



A Howard W. Sams CIRCUITRACE® Photo

PRINTED BOARD

PARTS LIST AND DESCRIPTIONS

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA			NOTES
			RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	2N212	Converter		2N1366	2N212	NPN
X2	2N94	1st IF Amplifier	2N410	2N1367	2N94	NPN
X3	2N233A	2nd IF Amplifier		2N1367	2N233A	NPN
X4	2N35	Driver	2N649		2N35	NPN
X5	2N214	Output	2N649		2N214	NPN
X6	2N214	Output	2N649		2N214	NPN

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT.	SILVERTONE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	
C1	10	10	44396-4	PTT-10010	NLW10-15	TT12X10	MLV10-10	TE-1114	
C2	80	10	44396-5	PTT-10100	NLW100-12	TT15X100	MLV100-10	TE-1119, 3	
C3A	80	12	44397-3	BCD10X8080	ECPAN14	PETA2385	MLV100-12	VL-2350	
B	80	12					MLV100-12		

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C4	50000		BPD-05	DD-503	DPMS2S5	DP-2-503	GP150	5HK-S50
C5	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C6	20000		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C7	11 NPO 10%		NPO-DI 10	DTZ-10	C10Q1C	CCTO-100	CNO-410	10TCC-Q10
C8	20000		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C9	20000		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C10	.1mfd 10V		C80V104AM	UK10-104				HY-320
C11	9 NPO 10%		NPO-DI 10	DTZ-10	C10Q1C	CCTO-100	CNO-410	10TCC-Q10
C12A	20000		BPD-2X02	DD-203	BYB6S2	CCD-203	B-120	5HK-2S20
B	20000			DD-203	BYB6S2	CCD-203	B-120	
C13	20000		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C14	1mfd 3V			UK-105				HY-135
C15	3300		BPD-0033	DD-332	BYA10D33	CCD-332	B-233	5HK-D33
C16	.22 100V		P215N-22		BC2P22J	DP-3-223	ACE-6022	2SE-P22

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	SILVERTONE PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1A	2200Ω	½	47500-13	B-702		Q13-111	RU252A	Volume
B	Shaft			Not Req.		Not Req.	SL-3500	
C	Bushing			Not Req.		Not Req.	SL-38	
D	Switch			KR-1		76-1	US 41	Power Off-On

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA			ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN TV PART No.	REMARKS			IRC PART No.	WORKMAN TV PART No.	REMARKS
R2	3900Ω				R13	470Ω			
R3	27K				R14	1000Ω			
R4	3300Ω				R15	220Ω			
R5	5600Ω				R16	6800Ω			
R6	47K				R17	39K			
R7	3900Ω				R18	470Ω			
R8	820Ω				R19	3300Ω			
R9	3300Ω				R20	68Ω			
R10	5600Ω				R21	10Ω			
R11	4700Ω				R22	10Ω			
R12	56K				R23	220Ω			

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		SILVERTONE PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	Workman TV PART No.	
L1	Loopstick	46861-8					
L2	Osc.	45783-3					
L3	1st IF	47733-3					
L4	2nd IF	45900-12					
L5	3rd IF	45900-13					

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA					NOTES
	PRI.	SEC.	SILVERTONE PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	1, 2	1	45604-9					

PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA					NOTES
	PRI.	SEC.	SILVERTONE PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	60Ω CT	3-4Ω	45838-4					

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	SILVERTONE PART No.	QUAM PART No.	
SP1	4"	PM	6-8Ω	45600-15	4A07Z6.4	
SP2	4"	PM	6-8Ω	45600-15	4A07Z6.4	

BATTERIES

ITEM No.	VOLTAGE	SILVERTONE PART No.	REPLACEMENT DATA						NOTES
			BURGESS		EVEREADY		MALLORY		
			"A"	"B"	"A"	"B"	"A"	"B"	
M1	1.5V	6445		230		A100		M-13R	6 Required

SIGNAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA				NOTES
		SILVERTONE PART No.	GENERAL ELECTRIC PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
M2	1N87 *			1N87	1N87	Overload (Pigtail) * Alternate Type 1N295

MISCELLANEOUS

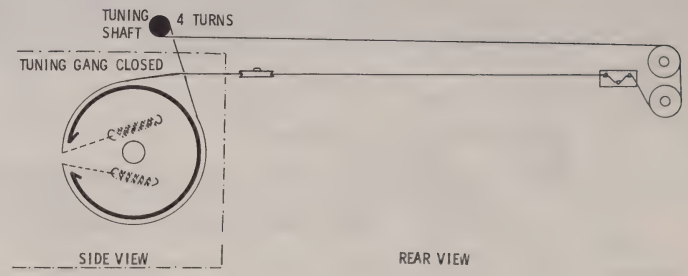
ITEM No.	PART NAME	SILVERTONE PART No.	NOTES
M3	Tuning Cap.	45039-1	2 Gang

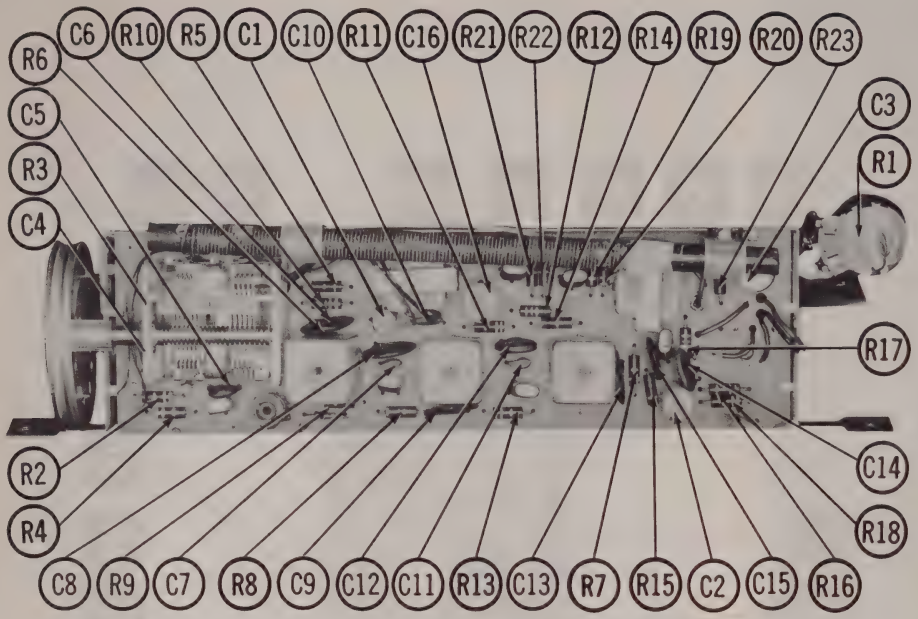
CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

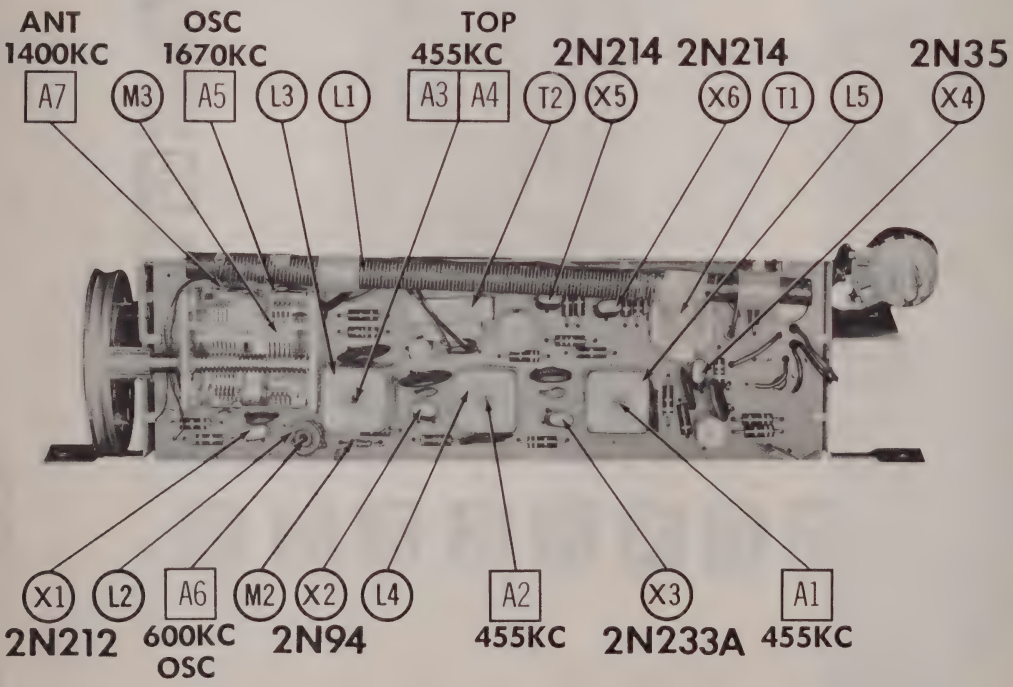
NAME	PART NO.	DESCRIPTION
Dial Crystal	48786	
Dial Pointer	48820-1	
Knob	48818	
Cabinet Front	48804-67	Ivory
Cabinet Back	49055-67	Ivory, Model 1016
Cabinet Back	49055-95	Ice Blue, Model 1017
Cabinet Back	49055-83	Coral, Model 1018

DIAL CORD STRINGING





CHASSIS TOP VIEW-CAPACITOR & RESISTOR IDENT.



CHASSIS TOP VIEW-ALIGN., INDUCTOR, MISC. & TRANSISTOR IDENT.

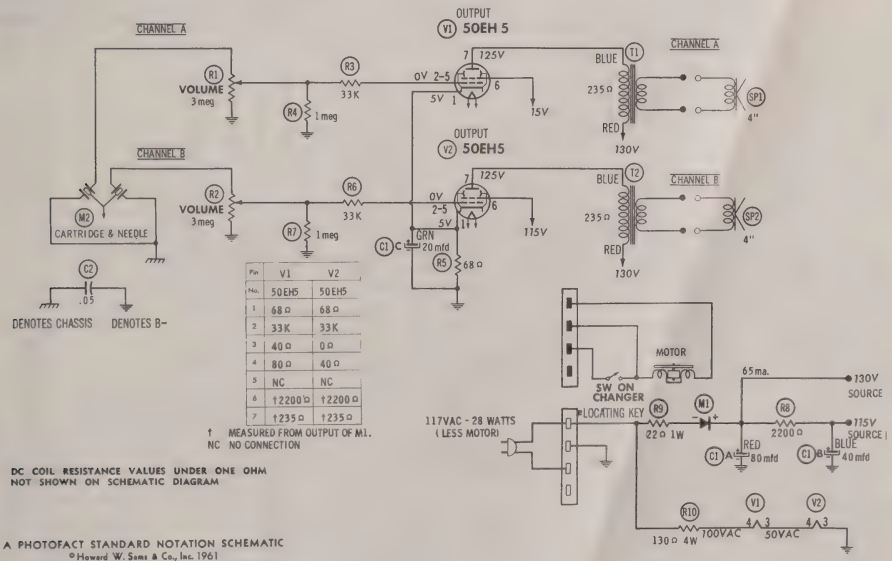
PHOTOFACT® Folder

SYLVANIA MODEL 45P17 (Ch. 663-1)

SYLVANIA MODEL
45P17 (Ch. 663-1)

TRADE NAME	Sylvania Models 45P17 (Ch. 663-1)
MANUFACTURER	Sylvania Home Electronics, Sylvania Electric Products Inc., 700 Ellicott Street, Batavia, N. Y.
TYPE SET	AC Operated 2 Tube Stereo Phono Amplifier with 4 Speed Automatic Record Changer
POWER SUPPLY	110-120 Volts AC, 60 Cycles RATING .28 Amp. @ 117 Volts AC (Less Motor)

FOR SERVICE INFORMATION ON RECORD CHANGER - SEE SIMILAR TELEFUNKEN TW-560 - PHOTOFACT SET 371 FOLDER 12 OR RECORD CHANGER MANUAL RC-10



Pin No.	V1 50EH5	V2 50EH5
1	68Ω	68Ω
2	33K	33K
3	40Ω	0Ω
4	80Ω	40Ω
5	NC	NC
6	†2200Ω	†2200Ω
7	†235Ω	†235Ω

† MEASURED FROM OUTPUT OF M1.
NC NO CONNECTION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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SYLVANIA MODEL
45P17 (Ch. 663-1)

SET 544 FOLDER 16

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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PARTS LIST AND DESCRIPTIONS

TUBES

◆ GENERAL ELECTRIC ◆ RAYTHEON ◆ SYLVANIA ◆					
ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V1	Channel A Output	50EH5	V2	Channel B Output	50EH5

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA SYLVANIA PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	80	150	161-3049	PRS4650	BBRT84215	TCT3117	TDLT-7	TVA-3437.1	
B	40	150							
C	20	25							

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C2	.05 400V		P488N-05	DD-503	CUB4S5	4DP-3-503	GEM-415	4TM-S50

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA SYLVANIA PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	3meg	½	153-0259	B-85	A47-3meg-Z	Q13-140	U57	Volume, Channel A
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	
R2A	3meg	½	153-0259	B-85	A47-3meg-Z	Q13-140	U57	Volume, Channel B
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA IRC PART No.	WORKMAN TV PART No.	REMARKS
R3	33K			
R4	1meg			
R5	68Ω			
R6	33K			

ITEM No.	RATING	REPLACEMENT DATA IRC PART No.	WORKMAN TV PART No.	REMARKS
R7	1meg			
R8	2200Ω			
R9	22Ω 1W			
R10	130Ω 4W	PW5-130	5W-SQ-130	

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA SYLVANIA PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T1	2500Ω	3-4Ω	143-0087	A-3025 ①	A-3332 ①	26S58	S-12Z	① Drill new mounting hole(s).
T2	2500Ω	3-4Ω	143-0087	A-3025 ①	A-3332 ①	26S58	S-12Z	

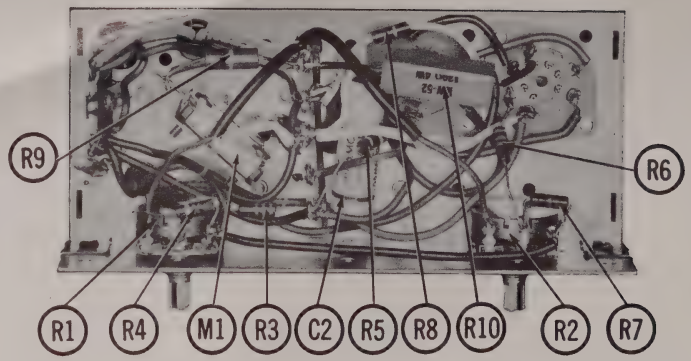
SPEAKER

ITEM No.	TYPE SIZE	TYPE FIELD	TYPE V. C. IMP.	REPLACEMENT DATA SYLVANIA PART No.	QUAM PART No.	NOTES
SP1	4"	PM	3-4Ω	539-0434	4A07	
SP2	4"	PM	3-4Ω	539-0434	4A07	

POWER RECTIFIERS

ITEM No.	RATING CURRENT (Measured)	REPLACEMENT DATA SYLVANIA PART No.	RCA PART No.	SARKES TARZIAN PART No.	SYLVANIA PART No.	NOTES
M1	.065A	517-0028 *	1N1763 ◆	2F4 ◆	SR200 ◆	* Selenium ◆ Silicon

CHASSIS—BOTTOM VIEW



PHONO CARTRIDGE & NEEDLES

*NEEDLE LISTINGS SHOWN ARE FOR RESPECTIVE REPLACEMENT CARTRIDGES ONLY.

ITEM No.	REPLACEMENT DATA SYLVANIA PART No. CARTRIDGE	SYLVANIA PART No. NEEDLE*	ASTATIC PART No. CARTRIDGE	ASTATIC PART No. NEEDLE*	ELECTRO-VOICE PART No. CARTRIDGE	ELECTRO-VOICE PART No. NEEDLE*	SONOTONE PART No. CARTRIDGE	SONOTONE PART No. NEEDLE*	NOTES
M2	916-0027	902-0012 * (LP)	70-TS	N8-7 *	96T	Not Req.	12TH-8	Not Req.	
		902-0013 * (78RPM)		N8-3 *					

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	740-0435	Volume, Channel 2
Knob	740-0434	Volume, Channel 1

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord	Use BELDEN No. 1765-B (6 Ft. Length) 1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting)	Use BELDEN No. 8401
Phono Pick-up Arm Cable	Use BELDEN No. 8430 (Two Conductor - Twisted)

PHOTOFACT® Folder with CIRCUITRACE®

TOSHIBA MODEL 7TP-30

TOSHIBA MODEL 7TP-30

TRADE NAME	Toshiba Model 7TP-30
IMPORTER	Transistor World Corp., 52 Broadway, New York 4, N. Y.
TYPE SET	Battery Operated Transistorized Portable AM Receiver
POWER SUPPLY	4.5 Volts DC
RATING	5MA @ 4.5 Volts DC (No Signal, Min. Volume)
TUNING RANGE—BROADCAST	540 — 1600KC
	10MA @ 4.5 Volts DC (Signal, Normal Volume)

TOSHIBA MODEL 7TP-30

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested Alignment Tools: A1, A2, A3, A5....GENERAL CEMENT #5004, 5009, 8195, 8274, 8275, 8607, 8728, 8987, 8988, 8989, 9291
WALSCO #2515, 2520, 2522, 2523, 2531, 2532, 2534, 2537, 2538
A4, A7.....GENERAL CEMENT #5000, 5003, 5066, 8276, 8290, 9087, 9089
WALSCO #2512, 2525, 2528

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	Loop	455KC (400~ Mod.)	Tuning gang fully open.	Across voice coil.	A1, A2, A3	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
2.	"	1600KC	1600KC	"	A4	"
3.	"	600KC	600KC	"	A5, A6	"
4.	"	1400KC	1400KC Signal.	"	A7	Adjust for maximum output. Repeat Steps 2, 3 and 4.

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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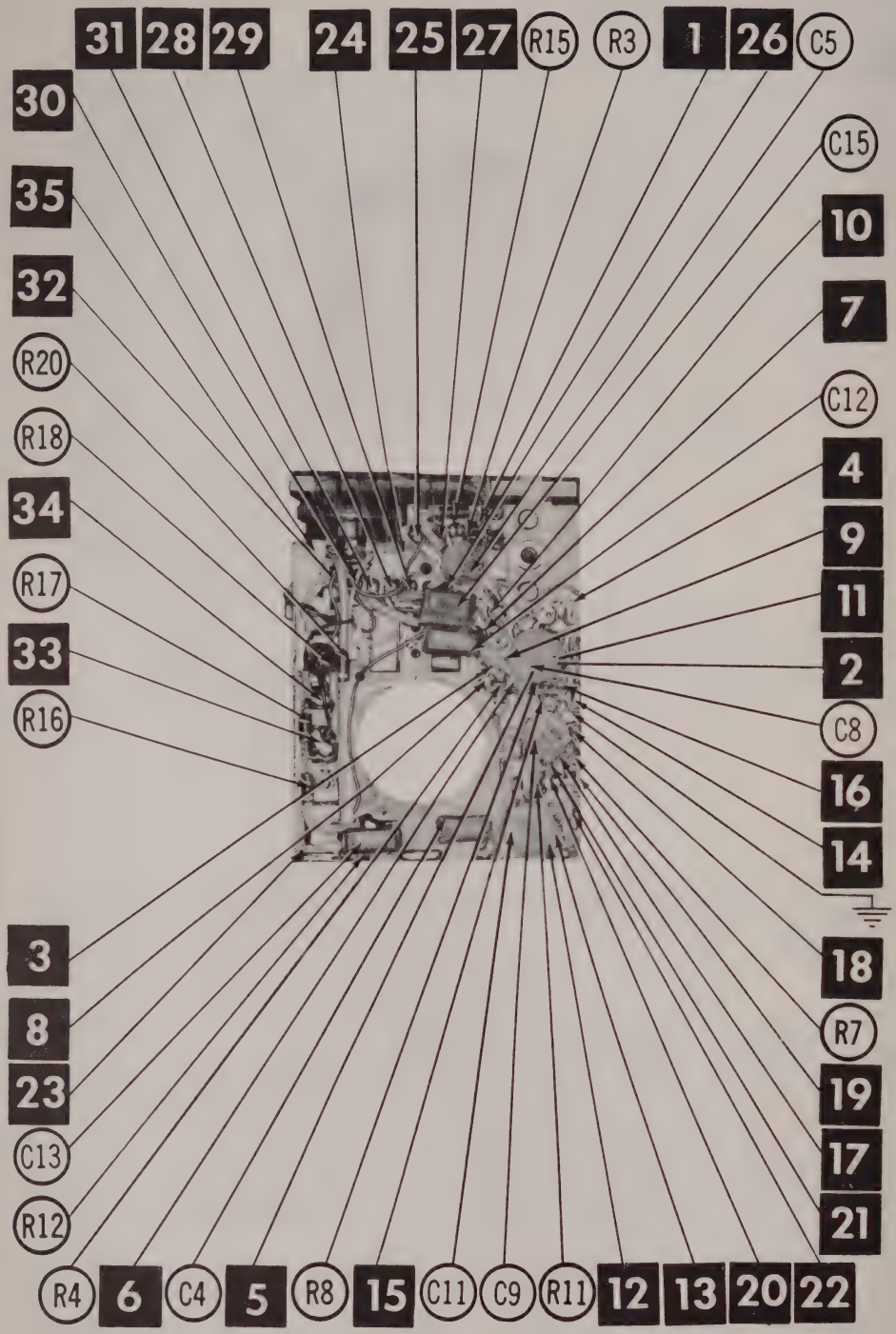
KF518

SET 544 FOLDER 17



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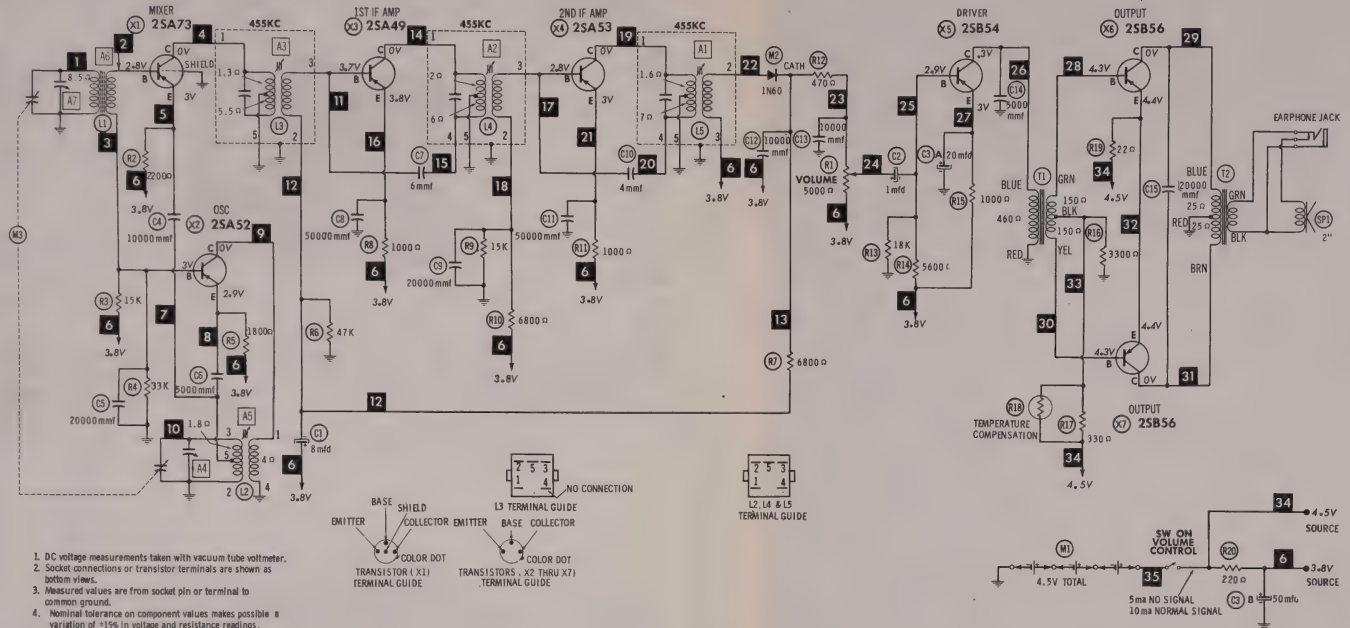

1. DC voltage measurements taken with vacuum tube voltmeter.
2. Socket connections or transistor terminals are shown as bottom views.
3. Measured values are from socket pin or terminal to common ground.
4. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
5. Volume control at maximum, no signal applied for voltage measurements.

RESISTANCE MEASUREMENTS NOT GIVEN BECAUSE OF THE WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE.

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

A PHOTOFACT STANDARD NOTATION SCHEMATIC
with CIRCUITRACE®

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TOSHIBA MODEL 7TP-30

PARTS LIST AND DESCRIPTIONS

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA			NOTES
			RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	2SA73	Mixer				PNP
X2	2SA52	Oscillator				PNP
X3	2SA49	1st IF Amplifier	2N410			PNP
X4	2SA53	2nd IF Amplifier	2N410			PNP
X5	2SB54	Driver	2N406			PNP
X6	2SB56	Output	2N408			PNP
X7	2SB56	Output	2N408			PNP

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	TOSHIBA PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1	8	5			NLW8-10	TT6X8			
C2	1	10			NLW1-50	TT12X1			
C3A	20	5							
B	50	5							

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C4	10000		C80V103AM	DM-103	H-05S1		TA-110	TG-S10
C5	20000		C80V203AM	DA-203	H-05S2		TA-120	TG-S20
C6	5000		C80V502AM	DM-502	H-05D5	CCD-502	TA-250	TG-D50
C7	6				C10V6C			
C8	50000		C80V503AM	DA-503	H-05S5		TA-150	TG-S50
C9	20000		C80V203AM	DA-203	H-05S2		TA-120	TG-S20
C10	4				C10V4C			
C11	50000		C80V503AM	DA-503	H-05S5		TA-150	TG-S50
C12	10000		C80V103AM	DM-103	H-05S1		TA-110	TG-S10
C13	10000		C80V103AM	DM-103	H-05S1		TA-110	TG-S10
C14	5000		C80V502AM	DM-502	H-05D5	CCD-502	TA-250	TG-D50
C15	20000		C80V203AM	DA-203	H-05S2		TA-120	TG-S20

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	TOSHIBA PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1	5000Ω	1/10	40572					Volume & Switch

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA			ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN TV PART No.	REMARKS			IRC PART No.	WORKMAN TV PART No.	REMARKS
R2	2200Ω				R12	470Ω			
R3	15K				R13	18K			
R4	33K				R14	5600Ω			
R5	1800Ω				R15	1000Ω			
R6	47K				R16	3300Ω			
R7	6800Ω				R17	330Ω			
R8	1000Ω				R18	Temp. Comp.			
R9	15K				R19	22Ω			
R10	6800Ω				R20	220Ω			
R11	1000Ω								

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		TOSHIBA PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	Workman TV PART No.	
L1	Loopstick						
L2	Osc.						
L3	1st IF						
L4	2nd IF						
L5	3rd IF						

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA					NOTES
	PRI.	SEC.	TOSHIBA PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	1	1	0415A			TR-38		

PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA					NOTES
	PRI.	SEC.	TOSHIBA PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	7000Ω CT	6-8Ω	0482A					

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	TOSHIBA PART No.	QUAM PART No.	
SP1	2"	PM	6-8Ω	50114		

BATTERIES

ITEM No.	VOLTAGE	TOSHIBA PART No.	REPLACEMENT DATA						NOTES
			BURGESS		EVEREADY		MALLORY		
			"A"	"B"	"A"	"B"	"A"	"B"	
M1	1.5V	UM-5 *		N *		W463 *		M-910R *	* 3 Required

SIGNAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA				NOTES
		TOSHIBA PART No.	GENERAL ELECTRIC PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
M2	1N60			1N60	1N60	Detector (Pigtail)

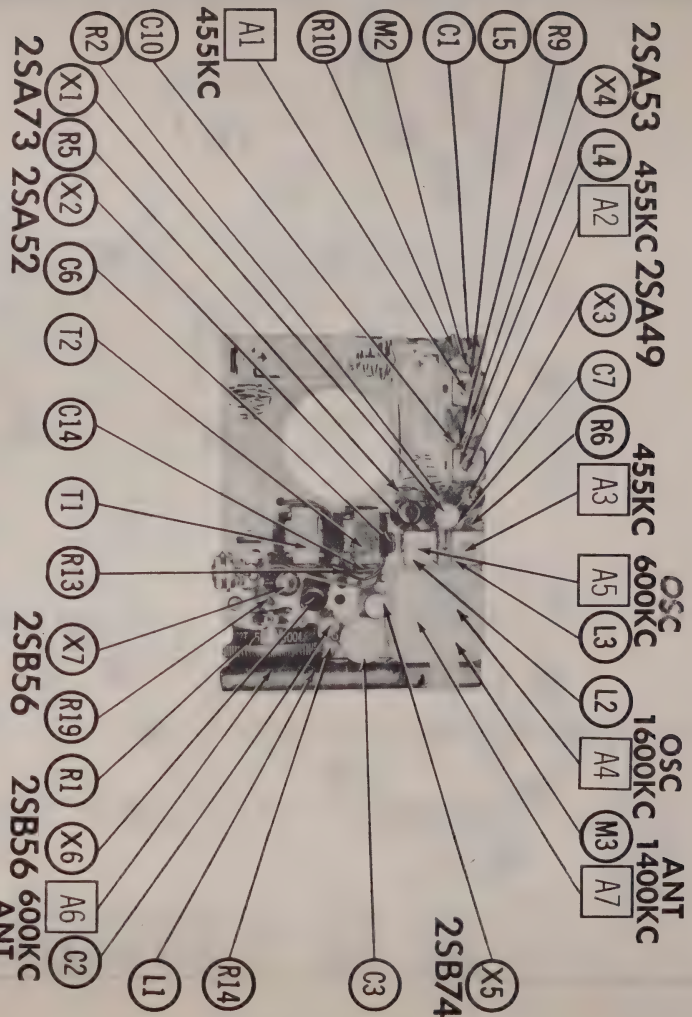
MISCELLANEOUS

ITEM No.	PART NAME	TOSHIBA PART No.	NOTES
M3	Tuning Cap.		2 Gang

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

CHASSIS—TOP VIEW



PHOTOFACT® Folder with CIRCUITRACE®

YASHICA MODEL YT-100

YASHICA MODEL YT-100

YASHICA MODEL YT-100

TRADE NAME	Yashica Model YT-100		
IMPORTER	Yashica Inc., 50-17 Queens Blvd., New York, N. Y.		
TYPE SET	Battery Operated Transistorized Portable AM Receiver		
POWER SUPPLY	9 Volts DC	RATING	8MA @ 9 Volts DC (No Signal, Min. Volume)
TUNING RANGE—BROADCAST	540 — 1600KC		15MA @ 9 Volts DC (Signal, Normal Volume)

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested Alignment Tools: A1, A2, A3, A5.... GENERAL CEMENT #5004, 5009, 8195, 8274, 8275, 8607, 8728, 8987, 8988, 8989, 9291
WALSCO #2515, 2520, 2522, 2523, 2531, 2532, 2534, 2537, 2538
A4, A6..... GENERAL CEMENT #5000, 5003, 5066, 8276, 8290, 9087, 9089
WALSCO #2512, 2525, 2528

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	Loop	455KC (400~ Mod.)	High end stop.	Across voice coil.	A1, A2, A3	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
2.	"	1600KC	1600KC	"	A4	"
3.	"	600KC	600KC	"	A5	"
4.	"	1400KC	1400KC	"	A6	Adjust for maximum output. Repeat Steps 2, 3 and 4.

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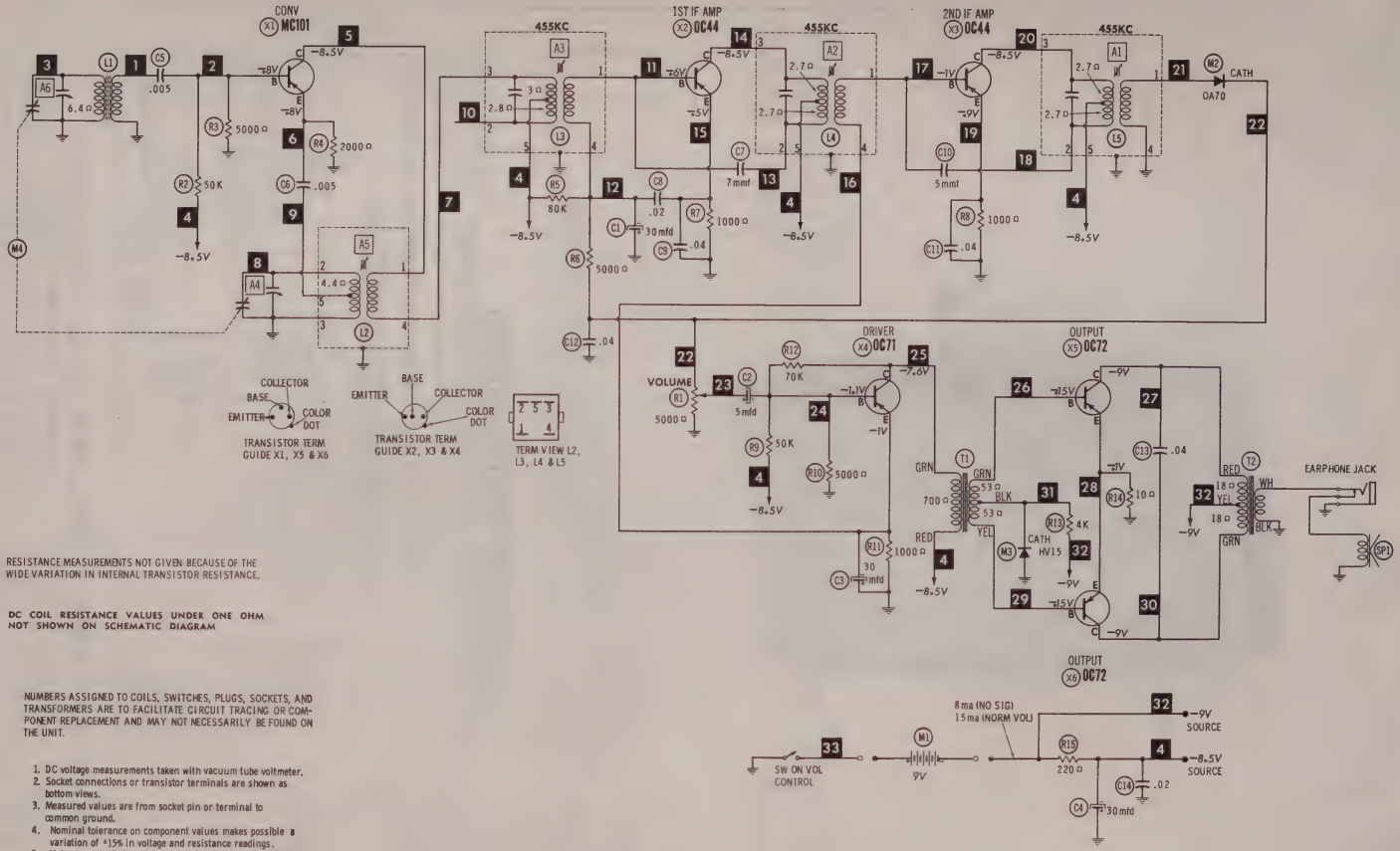
KF 611

SET 544 FOLDER 18



RESISTANCE MEASUREMENTS NOT GIVEN BECAUSE OF THE WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE.

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

1. DC voltage measurements taken with vacuum tube voltmeter.
2. Socket connections or transistor terminals are shown as bottom views.
3. Measured values are from socket pin or terminal to common ground.
4. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
5. Volume control at maximum, no signal applied for voltage measurements.

A PHOTOFACT STANDARD NOTATION SCHEMATIC with CIRCUITRACE

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YASHICA MODEL YT-100

PARTS LIST AND DESCRIPTIONS

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA			NOTES
			RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	MC101	Converter				PNP
X2	OC44	1st IF Amplifier		2N483	2N412	PNP
X3	OC44	2nd IF Amplifier		2N483	2N412	PNP
X4	OC71	Driver	2N406	2N362	2N406	PNP
X5	OC72	Output	2N408	2N632	2N408	PNP
X6	OC72	Output	2N408	2N632	2N408	PNP

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT.	YASHICA PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	
C1	30	6		PT27	NLW30-6	TT6X30	MLV30-6	TE-1092	
C2	5	6		PT21	NLW5-15	TT6X5	MLV5-6	TE-1084	
C3	30	6		PT27	NLW30-6	TT6X30	MLV30-6	TE-1092	
C4	30	10		PT43	NLW30-15	TT15X30	MLV25-12	TE-1158	

FIXED CAPACITORS

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C5	.005		C80V502AM	DM-502	H-05D5	CCD-502	TA-250	TG-D50
C6	.005		C80V502AM	DM-502	H-05D5	CCD-502	TA-250	TG-D50
C7	7		NPO-DI 6.8	DTZ-6R8	C10V7C	CCTO-6R8	CN7-568	10TCU-V68
C8	.02		C80V203AM	DA-203	H-05S2		TA-120	TG-S20
C9	.04							
C10	5		NPO-DI 5.0	DTZ-4R7	C10V5C	CCTO-050	CNO-547	10TCC-V50
C11	.04							
C12	.04							
C13	.04							
C14	.02		C80V203AM	DA-203	H-05S2		TA-120	TG-S20

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESIST-ANCE	WATTS	YASHICA PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1	5000Ω	1/10						Volume & Switch

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA			ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN TV PART No.	REMARKS			IRC PART No.	WORKMAN TV PART No.	REMARKS
R2	50K				R9	50K			
R3	5000Ω				R10	5000Ω			
R4	2000Ω				R11	1000Ω			
R5	80K				R12	70K			
R6	5000Ω				R13	4000Ω			
R7	1000Ω				R14	10Ω			
R8	1000Ω				R15	220Ω			

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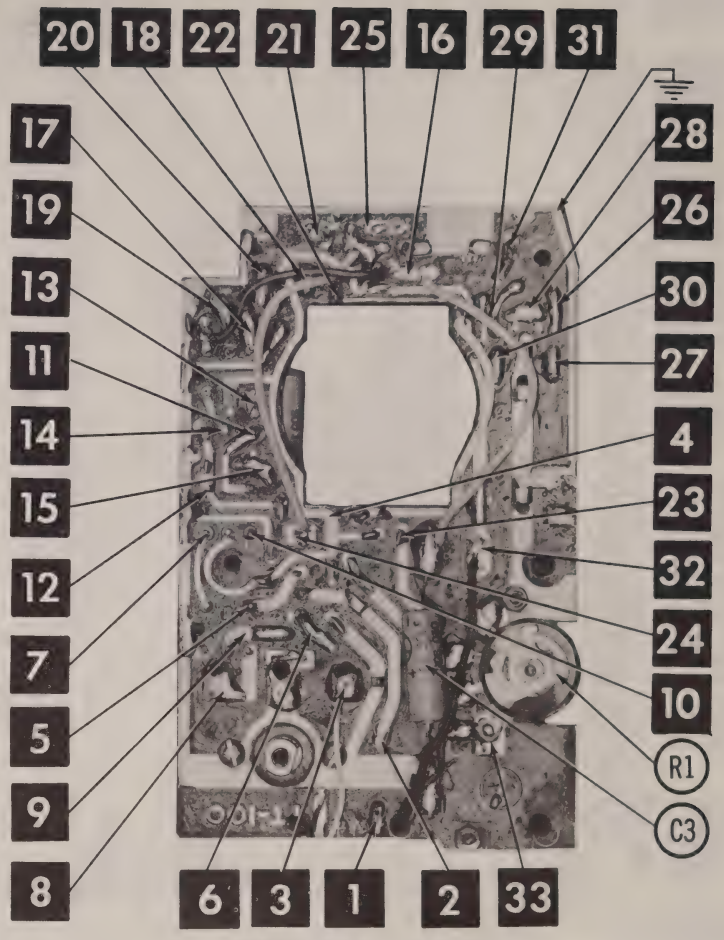


PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		YASHICA PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	Workman TV PART No.	
L1	Loopstick						
L2	Osc.						
L3	1st IF						
L4	2nd IF						
L5	3rd IF						

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA					NOTES
	PRI.	SEC.	YASHICA PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	1.8	1	M-1215					

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA					NOTES
	PRI.	SEC.	YASHICA PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	1500Ω CT	6-8Ω	M-1935					

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	YASHICA PART No.	QUAM PART No.	
SP1	2 1/4"	PM	6-8Ω		22A06Z8	

BATTERIES

ITEM No.	VOLTAGE	YASHICA PART No.	REPLACEMENT DATA						NOTES
			BURGESS		EVEREADY		MALLORY		
			"A"	"B"	"A"	"B"	"A"	"B"	
M1	9V	006P		2U6		216		M-1604	

SIGNAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA				NOTES
		YASHICA PART No.	GENERAL ELECTRIC PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
M2	OA70			1N60	1N60	Detector (Pigtail)
M3	HV15					Output Bias regulator

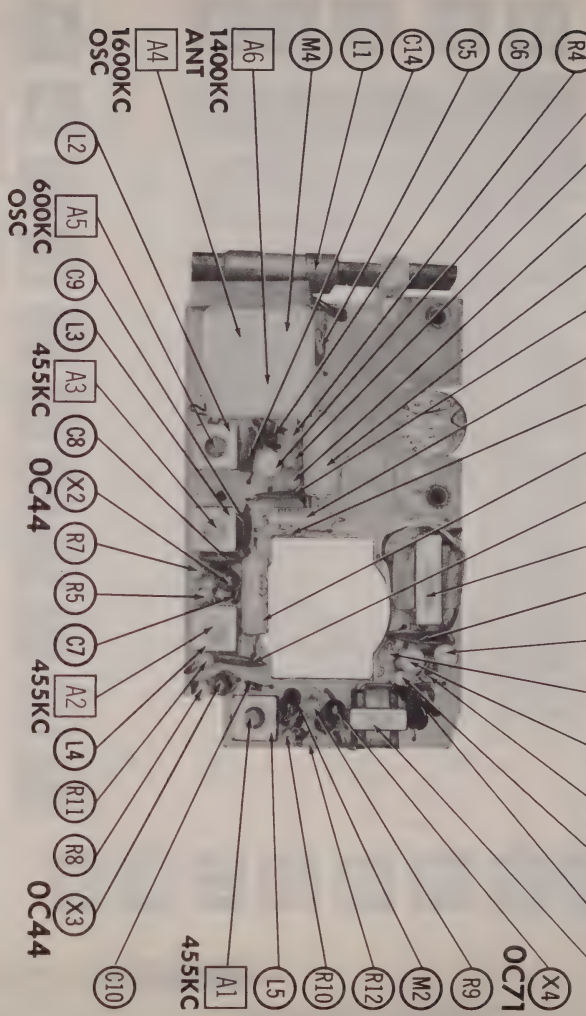
MISCELLANEOUS

ITEM No.	PART NAME	YASHICA PART No.	NOTES
M4	Tuning Cap.		2 Gang

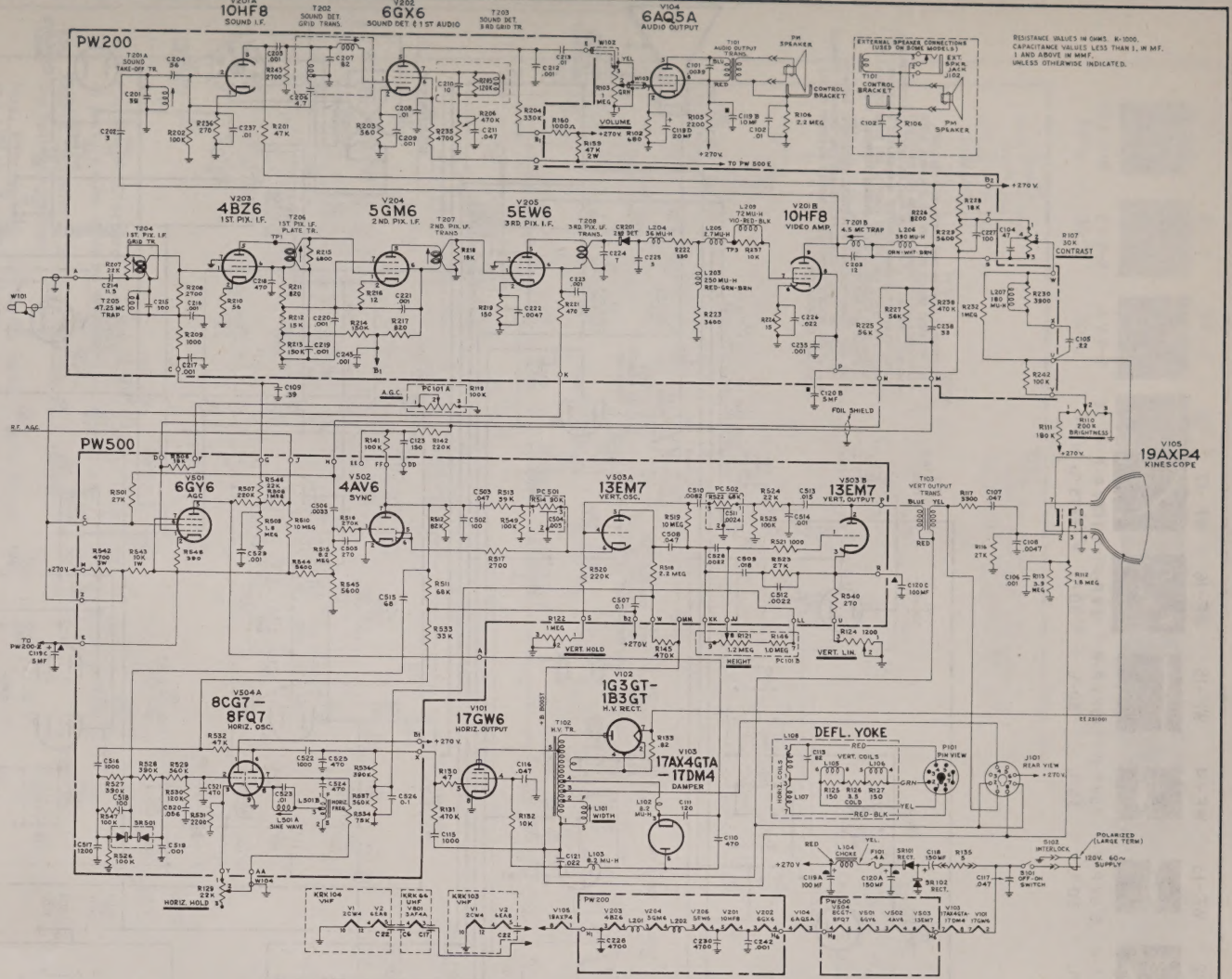
WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

CHASSIS—TOP VIEW

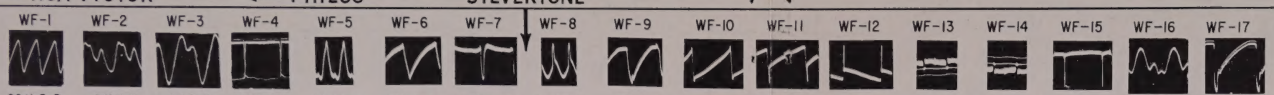


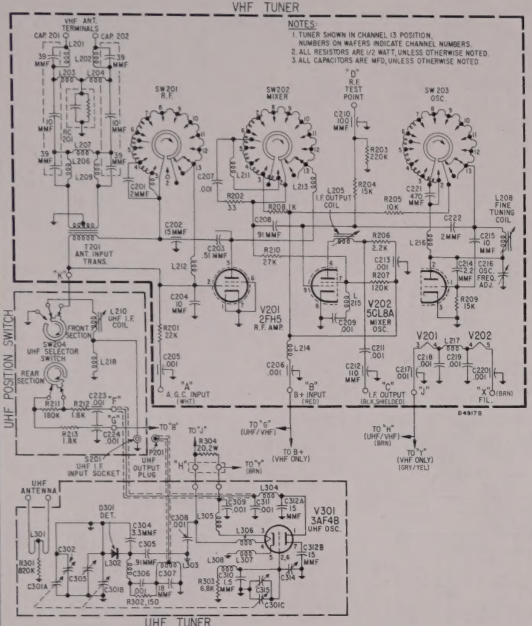
RCA VICTOR MODELS 192A062MU, MV,
192A064MU, MV (CH. KCS138A, B)



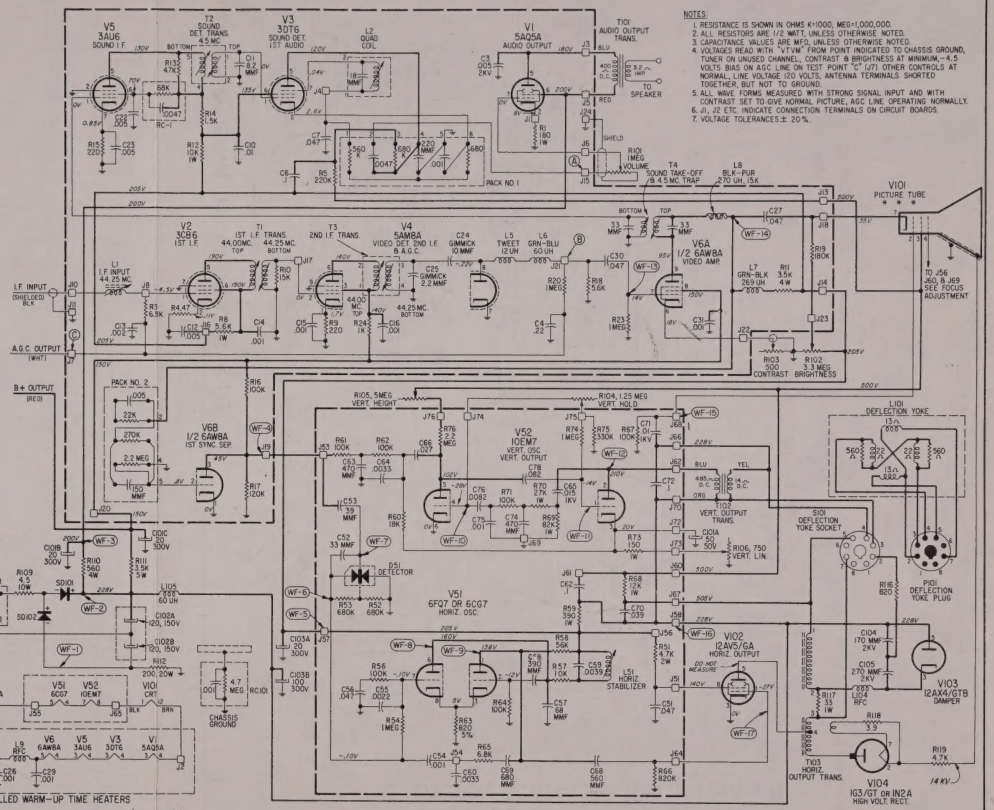
Schematic Diagram Courtesy of Radio Corporation of America

← RCA VICTOR ← PHILCO SILVERTONE





UHF/VHF Tuner Schematic


NOTES:
1. RESISTANCE IS SHOWN IN OHMS K=1000, MEG=1,000,000.
2. ALL RESISTORS ARE 1/2 WATT, UNLESS OTHERWISE NOTED.
3. CAPACITANCE VALUES ARE MFD, UNLESS OTHERWISE NOTED.
4. VOLTAGES READ WITH "VTVM" FROM POINT INDICATED TO CHASSIS GROUND, TUNER ON UNUSED CHANNEL, CONTRAST & BRIGHTNESS AT MINIMUM, -4.5 VOLTS BIAS ON AGC LINE ON TEST POINT "C" (J7) OTHER CONTROLS AT NORMAL, LINE VOLTAGE 120 VOLTS, ANTENNA TERMINALS SHORTED TOGETHER, BUT NOT TO GROUND.
5. ALL WAVE FORMS MEASURED WITH STRONG SIGNAL INPUT AND WITH CONTRAST SET TO GIVE NORMAL PICTURE, AGC LINE OPERATING NORMALLY.
6. J1, J2 ETC. INDICATE CONNECTION TERMINALS ON CIRCUIT BOARDS.
7. VOLTAGE TOLERANCES ± 20%.
V5 3AU6 SOUND I.F.
T2 SOUND DET. TRANS. 4.5 MC.
V3 3DT6 SOUND DET. 1ST AUDIO
V1 5AQ5A AUDIO OUTPUT
T101 AUDIO OUTPUT TRANS.
TO SPEAKER
V2 3CB6 1ST I.F.
T1 1ST I.F. TRANS. 44.00MC. TOP 44.25 MC. BOTTOM
T3 2ND I.F. TRANS.
V4 5AM8A VIDEO DET. 2ND I.F. & A.G.C.
V6A 1/2 6AW8A VIDEO AMP.
V6B 1/2 6AW8A 1ST SYNC SEP.
V52 10EM7 VERT. OSC. VERT. OUTPUT
V51 6FQ7 OR 6CG7 HORIZ. OSC.
D51 DETECTOR
VIO1 PICTURE TUBE
L101 DEFLECTION YOKE
S101 DEFLECTION YOKE SOCKET
P101 DEFLECTION YOKE PLUG
VIO2 12AV5/GA HORIZ OUTPUT
VIO3 12AX4/GTB DAMPER
T103 HORIZ OUTPUT TRANS.
VIO4 1G3/GT OR IN2A HIGH VOLT RECT.
R104, 1.25 MEG VERT. HOLD
R105, 5MEG VERT. HEIGHT
R106, 750 VERT. LIN.
VERT. OUTPUT TRANS.
LF. INPUT (SHIELDED) BLK
A.G.C. OUTPUT (WHT)
B+ INPUT (RED)
TO .256 .160, 9 .169 SEE FOCUS ADJUSTMENT
CONTRAST
BRIGHTNESS
SW101 OFF/ON VOLUME CONTROL
A.C. INTERLOCK
120 V A.C. 60 CYCLES 165 WATTS
R108 CIRCUIT BREAKER
SD101
SD102
CHASSIS GROUND
TO TUNER FIL.
600 MA CONTROLLED WARM-UP TIME HEATERS

CAUTION: Discharging or metering of second anode of picture tube must be to main chassis only.

NOTE: Schematic location numbers are arranged in the following order:

Nos. 1 through 50 - I.F. Sync. Sound Circuit Board
Nos. 51 through 100 - Horiz. - Vert. Circuit Board
Nos. 101 through 200 - Main Chassis
Nos. 201 through 300 - VHF Tuner(s)
Nos. 301 through 400 - UHF Tuner

SILVERTONE MODELS PC-2140, PC-2141, 2140, 2141
(CH. 456.50420, 50421, 528.50420, 50421)

Schematic Diagram Courtesy of Sears, Roebuck & Company

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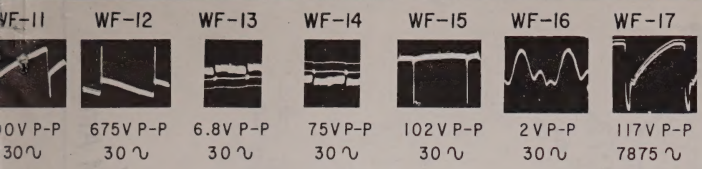
SET 544 FOLDER 19-S



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